Exploring teachers' professional development and digital literacy: a grounded theory study

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Abstract

Many aspects of living and working now involve the use of technology and this trend will continue to grow. Over 93 per cent of jobs in the UK now require at least basic digital skills. Outside of work, many aspects of day to day life are also mediated by technology; from banking and shopping to socialising. In this increasingly digital society, an individual requires the knowledge and understanding to make use of technology to suit their own unique needs. One response to this was the inclusion of digital literacy as part of the National Curriculum, viewed as a key foundation skill equivalent to traditional literacy and numeracy. But in order for teachers to help students develop their digital literacy they need support too. This became particularly important in relation to educational technology when in 2012 the UK's primary organisation for supporting the professional development of teachers with technology was abolished.

This thesis has taken a constructivist grounded theory approach to investigating how current professional development strategies support teachers' digital literacy continuing professional development (DL CPD). Focus groups, interviews and observations collected the experiences and opinions of in-service teachers, creating a theory that has been developed by prioritising teacher voice. The emerging theory suggests that within a climate of increasing accountability and performativity, teachers do not have the luxury of time and support to effectively engage with DL CPD. Due to restrictions on their available time and resources teachers must be discerning about the CPD with which they engage to ensure that they meet statutory requirements and school priorities. In particular four spheres of concern were identified that hold significant influence over a teacher's decision to engage with DL CPD: professional, personal, environmental and cultural. These spheres were synthesised with existing theory to create the Teachers' Digital Engagement Framework, a tool which can be used to both explore an existing DL CPD programme and support the design of future DL CPD programmes. The Teachers' Digital Engagement Framework was applied to the data collected in order to formulate recommendations for teachers, schools, educational research and Government policy.

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List of Abbreviations

ALT	Association of Learning Technologists
ASCL	Association of School and College Leaders
ATL	Association of Teachers and Lecturers
ATS	Articled Teacher Scheme
B.Ed.	Bachelors in Education
BECTA	British Educational Communications and Technology Agency
BERA	British Educational Research Association
BETT	British Education Technology Tradeshow
BSF	Building Schools for the Future
CAQDAS	Computer Assisted Qualitative Data Analysis
CfSA	The Council for Subject Associations
CPD	Continuing Professional Development
CUREE	Centre for the Use of Research and Evidence in Education
DCMS	Department for Digital, Culture, Media and Sport
DfE	Department for Education
DfEE	Department for Education and Employment
DL CPD	Digital Literacy Continuing Professional Development
DL	Digital Literacy
EAL	English as an Additional Language
GTP	Graduate Teacher Programme
HE	Higher Education
HEI	Higher Education Institution
HoD	Head of Department
ICT	Information and Communication Technology
INSET	In-service Education and Training
IPTS	Institute for Prospective Technological Studies
IST	Information Society Technology
ITE	Initial Teacher Education
LTS	Licensed Teacher Scheme
MATs	Multi-Academy Trusts
MIT	Massachusetts Institute of Technology
NAHT	National Association of Head Teachers
NASUWT	The National Association of Schoolmasters Union of Women Teachers
NCAT	National Curriculum and Attainment Targets
NCSL	National College for School Leadership
NCTL	National College for Teaching Leadership
NESTA	National Endowment for Science, Technology and the Arts
NFER	National Foundation for Education Research
NQT	Newly Qualified Teacher
NSDC	National Staff Development Council
NUT	National Union of Teachers
OECD	The Organisation for Economic Co-operation and Development
PGCE	Postgraduate Certificate in Education
PoS	Programme of Study
QCA	Qualifications and Curriculum Authority
QTS	Qualified Teacher Status
RCUK	Research Councils UK
RTP	Registered Teacher Programme

SCITT	School-Centred Initial Teacher Training
SEN	Special Educational Needs
SLT	Senior Leadership Team
SoNS	State of the Nation Study
STEM	Science, Technology, Engineering and Mathematics
TALIS	Teaching and Learning International Survey
TDA	Teacher Development Agency
TDT	Teacher Development Trust
TEAN	Teacher Education Advancement Network
UK RIO	UK Research Integrity Office
UNESCO	The United Nations Educational, Scientific and Cultural Organization

1. Introduction

This thesis aims to investigate the digital literacy continuing professional development (DL CPD) of secondary school teachers in the City of Leicester in the England. Increased attention has been drawn to teachers' DL in recent years, given the heightened understanding of its role in society. As more of everyday life becomes mediated by technology, basic DL skills become crucial for general engagement in modern life. Additionally, over 93 per cent of jobs in the UK now require at least basic digital skills (Mairs 2014, cited in UK Digital Skills Taskforce 2014). Without DL, individuals are at risk of being left behind and missing out on beneficial social and economic opportunities. The Government have responded to this by adding DL to the UK national curriculum. However, in order for teachers to support their students' development they need adequate support too.

This chapter begins by outlining the aim and objectives of the research, and the personal rationale of the researcher for conducting this study. This is followed by an introduction to the background context within which the study was designed and implemented. An explanation of the terminology used provides the reader with an introduction to the key concepts of the thesis and, finally, the original contribution is shared.

1.1 Aims

This thesis investigates how current professional development strategies support the development of secondary school teachers' DL. Of particular interest is the use of teacher voice to generate theory and recommendations for future practice. The experiences and opinions of in-service teaching staff, relating to their PD and DL confidence and practice, hold valuable insights into the processes and impact of current PD strategies. Therefore, a grounded theory approach was taken in order to produce a reliable interpretation of teacher voice by presenting the theory that emerged from their data, rather than imposing the researcher's personal views upon the research setting. The study began with the following research question:

How do current professional development strategies for secondary school staff in England support the development of staff digital literacy?

Whilst the topic of investigation was identified by the researcher, the main research question was negotiated with individuals within the setting, through their participation in the pilot study, in order to generate a question which has real significance for those working in compulsory education in England (Glaser 1998). The following objectives were then identified as key to the investigation of this research question.

- To explore existing professional development strategies in relation to the implementation of new technologies.
- To collate the experiences and opinions of in-service school staff, in relation to their professional development and digital literacy skills and confidence.

- To formulate recommendations, based upon the themes which arise from the data, on DL professional development strategies.

Upon engaging with the literature in this field, issues relating to professional identity and status, and how these effect expectations of PD, emerged as important themes in understanding the wider relevance of the research. This translated into additions in both the literature review and data collection that focused on teacher professionalism and how it is perceived. The initial objectives were then updated to mirror this development, as follows.

- To explore existing professional development strategies, including the effects of different interpretations of teacher professionalism and the implementation of new technologies.
- To collate the experiences and opinions of in-service school staff, in relation to their understanding of professionalism, their experiences of professional development, and their digital literacy skills and confidence.
- To formulate recommendations, based upon the themes which arise from the data, on digital literacy professional development strategies.

1.2 Rationale

This thesis grew out of The DigiLit Leicester project (2012-2014) which explored the DL of secondary school teachers (Hall *et al*. 2014). The project helped teachers to identify their own DL and then supported them in a variety of PD opportunities to enhance their practice. One outcome of the project was the realisation that whilst teachers with average to advanced DL made significant development during the lifespan of the research, those with the least DL made little to no progress. This highlighted the importance of a greater understanding of how PD supported teachers in developing their DL.

Having identified a topic of study, a reflective statement was written to help the researcher shape the design and focus of the thesis. This would become the first memo written for the PhD, with more created as part of the grounded theory approach (see section 3.2.1 *elements of grounded theory*). The reflective memo identified three primary goals for the PhD study.

Memo 1.1 03/10/2014

Value

It is my intention to share, and perhaps justify, my belief that digital literacy is critical to supporting staff in their use of technologies for all teaching and learning purposes. Digital literacy is not concerned with specific technological skills, but rather a general attitude towards working effectively with technology and being critical and reflective about the ways in which technologies are used. In a world heavily mediated by digital technology, digital literacy is essential to successful participation in society. Just like traditional literacy and numeracy, it is a form of foundational knowledge that offers a coping mechanism for keeping up with the pace of technological change in teaching and learning. By supporting school staff in developing their confidence and equipping them with the skills needed to identify technology that can work for them, we can build a foundation upon which more specific educational technology skills can be developed, as necessary.

Voice

I aspire to create a faithful representation of the viewpoints of the staff that work alongside me. I did not begin this thesis with an answer, only questions, and it is my belief that school staff are the best placed to provide the data from which an answer can be drawn. I do not want to underestimate their knowledge and expertise in this area.

Vocation

I want to develop something which is of practical use – rather than theory alone. Given that school staff will be volunteering their time to participate in my research, I feel that it is important for the contribution of my thesis to include a practical element which will be of value to staff. This may take the shape of a policy document, a training programme, etc.

Through previous experience in the field, the researcher has found that the primary focus within the literature surrounding DL is that of learners' skills and confidence (Fieldhouse and Nicholas 2008, Gillen and Barton 2010, Welsh and Wright 2010). Recent Government agendas have also focused on this outcome (Gove 2012b, DfE 2013b). If pupils are to develop their DL, however, then supporting teachers' PD is crucial. Research shows that teachers' confidence in the use of technology is a necessary condition for its effective use to support teaching and learning (EC and DG Connect 2013). It is important here to make a distinction between DL and more general information and communication technology (ICT) skills. Whilst ICT skills concentrate on the functional basics of technology use, DL was developed to encompass the skills required for interactive use of technology, to create as well as consume information (Kope 2006). It is this creative, critical use of technology that is of so much value within education, as 'young users often have basic knowledge skills which support internet access but lack the cognitive maturity to evaluate online communication and information' (Johnson 2008, p.40).

In order to develop a complete picture of PD, the researcher acknowledges that the most reliable source of information is teachers themselves. Unlike those who shape, plan and deliver CPD, teachers have the most on-hand experience of engaging in PD. They are also most keenly aware of what PD has resulted in lasting change and what has not. Despite having

conducted research in the field previously, the researcher makes no claims to be an expert; the only experts in teachers' PD are teachers themselves. Therefore, the most appropriate way to approach the research is to enter the field without a theory or hypothesis to test, but rather to engage with teachers and let theory develop from their experiences. This would also go some way to rectifying the balance of research conducted into teachers' professionalism and development, as most does not include teachers' own views (Swann *et al*. 2010).

If teachers are to be significant contributors to this thesis, then it will require the sacrifice of their time. The teaching profession has the second highest level of overtime worked in the UK, and a significant number leave the profession every year due to work-related stress (Trades Union Congress 2017, Iris Connect 2016). Any research conducted in the field must be mindful of this fact and seek to accommodate teachers' needs wherever possible. Additionally, it is important to ensure that time given from their daily duties in support of this thesis is used to create something that will compensate them for their efforts. To this end, the primary goal of the thesis is to generate theory and recommendations that benefit the teaching community directly.

1.3 The Research Setting

In response to the rise of the global knowledge economy, and the subsequent shift from Fordism to Post-Fordism, interest in the relationship between technology and the economy has grown (Brown *et al*. 2010). In recent years, following independent reviews and calls from industry, this interest has concentrated specifically on the digital skills and competence of the UK workforce (Livingstone and Hope 2011, The Royal Society 2012, UK Digital Skills Taskforce 2014, The Select Committee on Digital Skills 2015). Jobs within the digital sector are growing at twice the pace of jobs in other sectors and producing almost double the economic contribution (Tech City UK 2017). It is therefore unsurprising that the Government have turned their attention to developing a UK Digital Strategy, in order to further increase our global competitiveness in the digital sector (DCMS 2017a). The strategy focuses on seven key elements of the country's digital economy, including infrastructure, security, data management and, most importantly to this thesis, digital skills.

The digital skills element of the strategy responds to issues such as digital exclusion in the wider population, gender balance in the digital sector and the development of the future workforce (DCMS 2017b). It is striking to see that where schools are concerned, the focus is purely on the development of the Computing curriculum and the PD of Computing teachers. This is a valid concern, given the relatively recent introduction of the Computing curriculum and the lack of CPD that has been offered to those teachers in their transition from the ICT curriculum (The Royal Society 2017). For a digital strategy to prepare today's learners for their futures, however, DL is a skill that needs to be developed across the curriculum, in order to reflect the ubiquitous nature of technology in modern society. There is also the risk of creating more digitally excluded individuals if the focus remains on the Computing curriculum alone, as those students who do not have a strong interest in a Computing career may miss out on the value of a broader DL education. Therefore, DL CPD is of crucial importance to all school teachers and staff who support learning, not merely those teaching the Computing curriculum.

This need for DL instruction across all subjects is also raised as part of the counter-argument to the digital natives debate; the notion that the recent generation of learners are 'all "native speakers" of the digital language of computers, video games and the Internet' (Prensky 2001, p.1). The key issue with the debate focuses around the idea that digital natives are a generation; that age alone is what separates those with confidence in their use of technology from those without. In reality, many factors impact upon an individual's effective use of technologies, including breadth of use, experience, self-efficacy and education (Helsper and Eynon 2010). The other danger of associating digital native status with a specific generation is that those within the previous generation are considered digital immigrants by default. Many teachers would fall into this category. This creates significant risks for underestimating the potential of teachers for supporting students in their effective use of technology for learning.

One of the largest criticisms of the digital native debate is the lack of empirical evidence used to support its claims (Helsper and Eynon 2010, Bennett et al 2008). When research has been conducted in the classroom, it has been found that students are often not as computer savvy as might be expected, and that they find the critical evaluation of online sources particularly difficult (Hague and Payton 2010, Fieldhouse and Nicholas 2008). In order for students to develop the necessary skills to support them in the use of technology for learning and working, school staff must also be confident in their use of technology.

These developments have culminated in the acknowledgment that DL 'is an essential tool that underpins other subjects' and should be viewed as equal in importance to numeracy and traditional literacy (Select Committee on Digital Skills 2015, p.47). Despite this, guidance for educators in terms of how DL translates into the classroom is lacking, often resulting in teachers feeling ill-prepared to support their learners in engaging with technology in meaningful ways (Pianfetti 2001, Hague and Payton 2010, The Royal Society 2012). Teachers play a vital role in the success of technology adoption within schools and research has shown a clear link between staff confidence levels and the frequency and effectiveness of ICT use in the classroom (EC and DG CONNECT 2013). With the rapid pace of technological development, it could be argued that it would be more effective to equip educators with the confidence, general skills and knowledge for making the best use of technology, rather than teaching specific device or software skills. It is this notion that lies at the heart of DL, making it key to supporting teachers in preparing for the future.

Following the introduction of the Computing curriculum, of which DL is a key component, a review was conducted to investigate the support offered to teachers during the transition. Of the teachers surveyed, 26 per cent of Secondary school teachers had not received any CPD to support their teaching, whilst 57 per cent had received less than 20 hours over the academic year (The Royal Society 2017). The focus of this report is solely on those teaching the Computing curriculum. Given the lack of support for those directly teaching the subject, it is reasonable to assume that teachers of other subjects have received a similar, and potentially even smaller, amount of support for their DL development. How can teachers be expected to cultivate digitally literate students if they themselves are not adequately trained? When the Government are one of the principal voices calling for DL as a key skill, it is not unfair to

question why they then do not put into place the support necessary to achieve their own goals.

Not only have the Government failed to provide adequate support for teachers' DL CPD (The Royal Society 2017), but they have also helped to create a number of barriers. The first of these complications arose from the quick succession of Secretaries of State for Education, and their differing agendas. The introduction of the Computing curriculum, and heightened interest in DL in compulsory education, was raised by Michael Gove in 2012 (Gove 2012a). The new curriculum was introduced in 2014, at which time Nicky Morgan succeeded Gove following a cabinet reshuffle. With the ministerial change came a change in focus, with Morgan more determined to convert all schools into academies (Adams 2016). Just two years later and Morgan was replaced by Justine Greening when Theresa May came into power. Having taken a less traditional route into parliament, attending a Rotherham comprehensive school and non-Oxbridge University, Greening's primary focus for the department was social mobility (Coughlan 2016). Most recently, in early January 2018 during yet another cabinet reshuffle, Damien Hinds was appointed the new Secretary of State for Education, though it is not yet clear what his agenda will be (Hinds 2018). What can be seen here is that through regular change in ministers, the goal of the DfE has been continually shifting, and whilst each agenda has brought something useful to the teaching profession there has been no sustained support for any one cause.

In relation to teachers' DL CPD, this has been exacerbated by the removal of national support organisations, such as the British Educational Communications and Technology Agency (BECTA) and the Teacher Development Agency (TDA). Both were abolished in 2012 by the Coalition Government resulting not only in reduced support nationally for teachers' CPD, but in particular reductions to DL CPD for teachers. This is particularly important for those teachers who have not received formal training or do not work within a school that has a strong professional learning culture as they are essentially left to their own devices when searching out support and resources. Whilst there are a number of online communities that share practice, it can be difficult for those with low DL to engage with these and to know which of the myriad of resources available online are suitable to their needs.

Where training is provided, and support offered, there are still complications for all teachers in finding the time to embed DL into their existing practice. Even when time is allocated to staff for formal CPD sessions, teachers find there is still a lack of time available to reflect on that CPD and consider how it might be integrated into the classroom (The Royal Society 2017). A significant contributor to this issue is the current extent of a teacher's workload. In the UK, teachers regularly work an average of 55 hours or more per week, with upwards of 60 hours for those in senior positions (Asthana and Boycott-Owen 2018). Excessive planning, marking and data management have been shown to lead to unnecessary workloads that are causing untold stress for teachers and reducing their time to engage with PD. This workload challenge has resulted in recruitment being down by a third on previous years, vast numbers of teachers leaving the profession, and an 'epidemic of stress', with approximately 3,750 teachers on long-term sick leave in 2016/17 (Savage 2017, Hazell 2018, Asthana and Boycott-Owen 2018).

Additional complications are created by the £2.8 billion cuts to school funding made by the Conservative Government since 2015 (Baisley 2017a). At present, 60 per cent of secondary schools are running deficit budgets (ibid). The New Funding Formula devised by the Government in 2015 will result in a collective loss of £8.9 million for Leicester schools; this equates to a loss of approximately £182 per pupil, or 197 teachers in the area (Baisley 2017b). Schools across the country are having to resort to requesting donations from parents in order to fund the curriculum, or consider reducing the school week to four days to cover the budget shortfall (Adams and Marsh 2017, Weaver *et al*. 2017). In this climate it is not surprising that schools are unable to support all areas of teachers' CPD and ensure technological issues can be managed in real-time, for instance through a technician being available onsite five days a week.

In response to a wave of criticism over the funding plans in the run up to the 2017 General Election, including a number of protests, Justine Greening, Secretary of State for Education, announced an additional £1.3 billion to be added to the schools budget for the academic years 2018/19 and 2019/20 (Association of Teachers and Lecturers 2017, Sparrow 2017). What is not clear, however, is how the funding change will affect the rest of the department, since the money will be redistributed within the Education Department (Sparrow 2017). Greening did identify two of the budgets that would be redirected to core school funding: the free schools budget and Healthy Pupils Capital Funding. Alongside these, Greening noted that she would 'seek to identify £200m that I can redirect from the Department's central programmes that support schools on relatively narrow areas of their work' (cited in Sparrow 2017). This begs the question of what these programmes will be and what effect reducing their funding will have. It should also be noted that the Government did not inform schools of the changes to their individual budgets until September 2017, giving them very little time to rework their internal budget streams in accordance to the national changes. This is an example of the mismatch between policy and school processes, such as the need to take timetables into consideration when implementing new systems. This lack of time for schools to adequately plan their budgets will also likely have a negative impact on financial support for teachers' CPD, as budgets are quickly redirected to make up deficits.

Whilst Leicester schools are facing budget cuts like many others across the UK, they have been in a relatively unique position. Before the study began all 23 Secondary schools across Leicester City participated in the Building Schools for Future (BSF) programme (2006-2015). This resulted in all premises being rebuilt or refurbished. The building works were completed before the commencement of the PhD research, however, for many of the participating schools the data collection took place during the first year of their new surroundings and equipment. The BSF programme meant that whilst facing similar cuts to other schools in the country, the Leicester schools had recently been equipped with new technologies and supporting infrastructure. As part of the BSF programme, the schools also engaged with the DigiLit Leicester project, a research project aimed to support schools in making best use of the new technologies at their disposal.

All schools participated in at least one element of the project, including engagement with a DL self-evaluation framework and participation in city-wide PD opportunities. This involvement with the project meant that for many participants in the PhD study, the concept of DL was not new. Familiarity with the main concept for discussion greatly supported the PhD research, as did the existing relationships between the researcher and participants. It should be noted, however, that familiarity with DL as a concept did not always translate to confidence in digital practice. Whilst engagement with the DigiLit Leicester project stands the schools apart from others in the country, the variety of confidence levels across the participant group was wide-ranging.

Memo 1.2 26/03/2018

When taking a grounded theory approach, it is advised to be reflexive about one's own position throughout the research. Having presented my personal goals for the thesis, it may also be of value to make my political position explicit. In this way, the critique and discussions offered throughout the thesis are given greater context. In particular it is important to note that when it comes to education my political views are strongly intertwined with my personal beliefs and priorities. This is because I see first-hand the impact of education policy, particularly increased accountability, through the effect it has on my partner and closest friends who work as teachers in both primary and secondary school settings.

As my position is demonstrated throughout the thesis, and particularly within the following review of the literature, I will only summarise briefly here. My view is that education policy, particularly in relation to teachers' professionalism and development, currently lacks the necessary input of those within the field itself. Too often we have witnessed ministers with little to no background in the education sector making radical changes to the system on political whims. In many cases this is with little to no input from the profession, or directly against their wishes. All the while, teachers are expected to keep up with these changes and continue to make significant impact on their pupils' achievement. Teachers are the experts in their field, and yet their voice is so little heard.

1.4 Terminology

There are a number of terms used by the researcher within this study. To aid the reader, the most prominent and fundamental to the overall message of the thesis are explained below.

"Digital Literacy" refers to the skills and confidence required to support teaching and learning in a contemporary classroom setting. The definition presented by the DigiLit Leicester project will be adopted in this study, as it relates specifically to how DL translates into the classroom, providing a clear explanation for educators as to how it is relevant to their practice.

> To be digitally literate, educators must be able to utilise technology to enhance and transform classroom practices, and to enrich their own professional development and identity. The digitally literate educator will be able to think critically about why, how and when technology supplements learning and teaching.
>
> (Hall et al. 2014, p.53)

"**Digital practices**" are those teaching practices that are mediated by technology. This may take the form of specific tools and devices or of software packages and online services. It is not always necessary to differentiate between the two when discussing the application of DL, as it the practice and not the tool that is of importance.

"Continuing Professional Development" is used in the broadest sense within this study. It refers not only to formal, structured PD, for example, safeguarding and those elements of teaching practice which are a statutory requirement, but also to the informal, personally driven development which educators engage in through their own interests. Helsby (1999) identifies three types of PD for teachers: initial teacher education (ITE); CPD; and work-based learning. The focus of this thesis lies in the latter two categories, concerning the on-going learning and development of in-service school staff and so CPD will be used to represent both of these forms of PD.

"Teachers" will be used, within this study, to refer to all staff working within Secondary school classrooms who support learning. This research aimed to work with a wide range of school staff including: senior leadership with a teaching role; teachers; classroom assistants; and specialist provision (such as English as an Additional Language, EAL, and Special Educational Needs, SEN, support). In order to adequately support learners, all educators should be confident in their use of technology to support teaching and learning. Whilst a range of roles have been included in the study, the majority of participants view their primary role as a teacher. Therefore, "Teachers" will be used in all cases, unless a clear distinction is necessary, in which case specific job titles will be referred to.

1.5 Contribution

This thesis makes an original contribution in three parts, to develop a richer, practical analysis of secondary school teachers' digital literacy. First, it utilises the experiences and opinions of secondary school teachers in order to generate a grounded theory of the conditions in which teachers' professional development relates to their digital literacy. Second, from the data, a framework is developed, identifying four spheres of concern that influence the teachers' technology integration into their practice. This framework is used to explore the phenomenon in greater detail in order to reach an understanding of how the teachers within this study engaged with their digital literacy professional development. Additionally, the framework is refocused to create a scaffold for considering the appropriate support that could be implemented within the setting. Third, recommendations are formulated for the education community, through the use of the support framework, to improve teachers' digital literacy professional development.

1.6 Outline structure

Chapter 1: Introduction

This chapter introduces the aim and objectives of the research, alongside the personal rationale of the researcher for conducting this study. This is followed by an introduction to the background context within which the study was designed and implemented. An explanation of

the terminology used provides the reader with a basic introduction to the key concepts included and, finally, the contribution of the thesis is shared.

Chapter 2: Literature Review
This chapter evaluates the literature, focusing on three main themes derived from the reading: professionalism; professional development; and DL. Teacher professionalism is discussed in relation to the impact of successive Government reforms and subsequent prevalent perspectives. Professional development is reviewed within the context of English CPD programmes for school staff and the elements that can impact its success. DL is introduced as a general concept, then discussed specifically within the context of teaching and finally, examples of existing CPD for DL are examined. These three themes offer a comprehensive theoretical foundation upon which this thesis builds and improves.

Chapter 3: Methodology
In this chapter, the methodological approach is presented via the framework of Dyson and Brown's (2006) conceptual levels of research design. The chapter begins with a discussion of the theoretical paradigm within which the study was conducted. This is followed by a rationale for the research strategy employed and a discussion of grounded theory methodology. To illustrate the process of the PhD study, the research methods are identified and detailed, followed by the data analysis technique and procedure. Finally, the methodological considerations of trustworthiness and ethical practice are discussed.

Chapter 4: Findings
This chapter presents the prominent categories from the research, using a three-part format. Firstly, categories will be defined within the parameters of the study. Secondly, a conceptual map for each category will be presented to illustrate the main themes within the category. Thirdly, the main themes will be described using quotations and memos where appropriate. The chapter closes with a presentation of the observation findings.

Chapter 5: Teachers' Digital Literacy Professional Development
This chapter represents the conceptual development of the thesis. Here the prevailing theory that has emerged from the data is presented. This is followed by the introduction of a framework that will be used to explore the findings in more detail. This is compiled of the four spheres of concern that influence a teachers' technology integration. The framework is presented here, following the findings chapter, to authentically portray the process of the research.

Chapter 6: Discussion
This chapter will consider the data through each sphere of concern in order to consider teachers' DL CPD more deeply. Each sphere will be used as a lens through which to explore the data collected, examining the influence of each on teachers' technology integration and engagement with DL CPD. This will begin with an exploration of teachers' professional needs in relation to their DL CPD, followed by their perceptions of their personal ability in relation to digital practices, the support systems available within their working environment and, finally, the influence of their wider school and professional culture. The framework will then be used

as a scaffold to highlight support structures that could benefit individuals and institutions in developing school staff DL. In this way, the framework that has been developed throughout this thesis can be seen as both an exploratory and support framework, creating not only greater theoretical understanding of the situation, but also practical advice and guidance to support it.

Chapter 7: Conclusion

The final chapter of the thesis formally presents the recommendations of the research, alongside the wider implications of the PhD study for practitioners, the research community and the education sector more widely. The study is evaluated using Charmaz's (2014) criteria for grounded theory methodology, to support the consideration of its credibility, originality, resonance and usefulness. The limitations of the project will also be explored and the contribution of the thesis presented.

2. Literature Review

To present the context of this thesis, a review of the literature was conducted in three areas: professionalism, professional development, and digital literacy. These three topics underpin the themes of the thesis as a whole and provide a useful theoretical foundation upon which the empirical research is built. Teacher professionalism will be discussed in relation to the impact of successive Government reforms and subsequent prevalent perspectives. Professional development will be reviewed within the context of English CPD programmes for school staff and the elements that can impact its success. DL will be introduced as a general concept, then discussed specifically within the context of teaching and finally, examples of existing CPD for DL will be examined. This will provide an introduction to the range of interpretations of teachers' professional status, a brief overview of the various factors affecting PD, and an investigation of existing strategies for DL development.

2.1 Professionalism

Whilst the focus of this thesis is the PD of teachers' DL, it is useful to first consider the professional status of teachers to gain a clearer understanding of the professionalism that is to be developed. Teachers' PD is a highly debated topic, though primarily from voices outside of the teaching body. Here we explore how successive Governments have influenced teachers' professionalism through policy and the impact this has had on definitions of professionalism today.

2.1.1 Government Intervention and teachers' professional status

We begin by considering the impact on teacher's professional status by Government interaction with education policy, in an attempt to set the scene for the later discussion of how teachers' PD is defined. This will be presented thematically through a chronology, in order to show the impact of successive Governments. The primary focus of this section will be from 1979 onwards, as it was during the Thatcher Government that information technology began to appear in the classroom, making it the most suitable period within the scope of the thesis (Younie and Leask 2013). Whilst the Conservative/Liberal Democrat coalition and succeeding Conservative Governments are, of course, two separate parties, more recent policy papers indicate that views regarding education shared since 2010 are in line with the current Conservative Government's agendas (DfE 2016a). For this reason, policy under these two Governments will be discussed as a whole. Three areas of teacher professionalism have been identified, in which all four Governments have intervened, namely: the introduction of alternate routes into teaching; the enforcement of Government-defined teaching standards; and the creation of strategies to support CPD.

2.1.1.1 Routes into teaching

Articled and Licensed Teacher Schemes

The articled and licensed teacher schemes were introduced in 1989 (DfE 1989) and marked the end of exclusively University-based teacher education. Prior to 1989, the two primary routes into teaching were the Bachelors in Education (B.Ed), a four year degree, or the postgraduate certificate in education (PGCE), a one year advanced degree following an undergraduate subject degree (Lumb *et al*. 1991). The new schemes came shortly after the introduction of the

National Curriculum in 1988 (DfE 1988), which had a significant impact on teachers' professional status as it shifted control of the curriculum away from the teaching body (Helsby 1996). The articled teacher scheme (ATS), implemented between 1989 and 1994, was a school-based course which ran for two years and involved 80 per cent of study in a school setting. The licensed teacher scheme (LTS) was designed to provide mature students who had a minimum of two years higher education (HE) experience (though not necessarily a graduate), with a two year license under which they could train in school to gain a full qualification.

The schemes were introduced as strategies to counteract the recruitment shortages in the late 1980s, however, it became clear over time that they were in fact a pilot to test out alternative routes into teaching (Furlong *et al* 2000). The Conservative Government, led by a personal request from Margaret Thatcher, aimed to curb the influence of academia on teacher education, which was deemed too liberal and progressive (MacBeath 2011). This approach was reinforced by the introduction of School-centred initial teacher training (SCITT) in 1993, which saw groups of schools forming a consortium to independently provide their own initial teacher education (ITE) courses, backed by Government funding (Foster 2000).

Allowing unqualified teachers to practice in schools, even during their training, suggests that the skill of teaching is merely in the delivery of learning materials, and that pedagogic knowledge and practical expertise are not necessary prerequisites. Indeed the HE sector and teaching unions believed that the schemes 'served publicly to undermine the claim that forms of knowledge traditionally made available through higher education were a necessary part of professional preparation' (Furlong *et al* 2000, p.59). A high level of education and training is seen as a common characteristic of a professional (Pollard 2010) and it can be argued that the professional status of teaching is 'inextricably linked with its association with universities' (Pring 1999, p.477). Therefore, by removing the requirement of a qualification, the extent to which teaching can claim to be a profession is reduced.

Graduate Teacher Programme and Teach First

When the New Labour Government came into power in 1997, they introduced two new routes into teaching, which could be seen as extensions of the earlier ATS and LTS initiatives: the Graduate Teacher (GTP) and Registered Teacher Programmes (RTP). These schemes were offered from 1998 to 2012 and were aimed at mature students and non-graduates, respectively, who wanted to gain their qualified teacher status whilst continuing to earn. The rationale behind the schemes was to attract more graduates to the profession during a staffing crisis. Similarly to the ATS and LTS, however, they served as a continuation of Government manoeuvres to shift the control of ITE away from HEIs (Foster 2000). Again, the belief that a teacher can learn on the job undermines the significant theoretical and pedagogical knowledge-base of the profession.

Later, in 2002, the Government launched the Teach First scheme, a school-based training programme designed to attract high quality graduates who may not otherwise consider teaching. The programme was launched as part of the London Challenge, to bring high achieving trainee teachers into challenging schools in an attempt to address social inequality in central London (Gove 2012a). It gradually expanded its remit over the following years;

including schools outside of London in 2005, primary schools in 2011 and early years in 2013 (Teach First 2017). Whilst Teach First maintains the notion that teaching is a graduate profession, it has been seen to ignore the importance of pedagogic preparation (Gray and Whitty 2010). Interestingly, it has also been found that trainees joining the profession through the Teach First scheme have the lowest retention rate of all possible routes into teaching (Allen and Allnut 2017). Without the academic, pedagogic foundation provided by university-led ITE, it may be that Teach First trainees are underprepared for the reality of the role.

Multiple streams and unqualified teachers

Currently there are three streams of initial teacher education: university-led, school-led and specialist training routes (Roberts and Foster 2017). The B.Ed and PGCE are still the primary university-led routes to qualified teacher status. The school-led routes include School Direct and SCITT, and the specialist training routes include Teach First, Troops to Teachers and Researchers in Schools. The School Direct programme was introduced in 2012 to replace the GTP and RTP schemes (Roberts and Foster 2017). The programme puts schools in control of recruitment and financing but still requires them to partner with awarding bodies, usually universities (Jackson and Burch 2016). Given that schools are empowered to decide the extent of the support they receive from universities; this could result in major variation of provision across the country. From 2018, this will also be joined by the Postgraduate Teaching Apprenticeship. The information shared about the apprenticeship is still scarce, though it appears that the structure takes an 80:20 approach to on and off-the-job training (NCTL 2017). The language used here is important, as the focus is clearly on training and not education. The focus has once again been pulled further away from the traditional view of a strong theoretical foundation, and closer to the teacher as deliverer of curricula. The Association of School and College Leaders (ASCL) claims that the new route is unnecessary and only works to further complicate the application process for future teachers (ASCL 2017).

Troops to Teachers and Researchers in Schools are both schemes aimed at bringing ‘experts’ and high performing trainees into the classroom. Whilst previous schemes have required individuals to have some academic background, Troops to Teachers requires no such preparation (Roberts and Foster 2017). This means that individuals are entering the classroom who no longer have a strong subject knowledge, let alone any pedagogic understanding. Similarly, whilst the Researchers in Schools programme is aimed at recruiting PhDs into teaching, there is no guarantee that these individuals will have any knowledge of how pupils learn. Both of these schemes actively undermine the value of pedagogic knowledge, and even a sound subject knowledge, in the case of the Troops to Teachers programme.

In parallel to these developments, the Coalition Government took the deprofessionalisation of ITE one step further in 2012 when they relaxed the laws on employing unqualified teachers for academies and free schools (DfE 2012). The driving force behind the revision was to allow schools to employ industry experts, who may not have formal teaching qualifications. The regulations received much criticism from the shadow education cabinet, who claimed that the regulations were 'damaging school standards by making entry requirements into teaching in this country amongst the lowest in the world' (Labour 2014). Recent reports show that over

24,000 unqualified teachers now work in English schools (Syal 2017). This move can be seen as the final step in a process which began with the ATS and LTS schemes. Initially individuals were allowed into schools unqualified in order to gain their qualifications, and through successive Government intervention this has been further developed to enable unqualified teachers into the classroom on a day-to-day basis.

As can be seen from the review above, there is a continuing trend across the period of reduced input from HEIs and increased choice in provision of ITE. These policy agendas worked to remove the influence of higher education teacher educators, deemed to be damaging teacher training with leftist ideals and Marxist bias (The Hillgate group 1989). The increase in possible routes into teaching served to open up ITE to market forces, improving the quality of provision through competition (Lawlor 1990).

2.1.1.2 Teaching Standards

Teacher Competences

Alongside new routes into teaching, the introduction of the National Curriculum also sparked the publication of 'competences expected of newly qualified teachers' which were introduced in 1992 as assessment criteria for entering into teaching (DfE 1992). These marked the first iteration of Government defined expectations for teachers' professional practice. The consisted of 27 statements of expected standards of teaching performance for newly qualified teachers, introducing a new language of performativity and quality control into teachers' professional practice.

> Newly qualified teachers should be able to: …
>
> > 2.2.2 [demonstrate] knowledge and understanding of the National Curriculum and attainment targets (NCATs) and the programmes of study (PoS) in the subjects they are preparing to teach, together with an understanding of the framework of the statutory requirements; …
> >
> > 2.3.1 produce coherent lesson plans which take account of NCATs and of the school's curriculum policies; …
> >
> > 2.5.3 assess and record systematically the progress of individual pupils;
> >
> > 2.5.4 use such assessment in their teaching...
>
> (DfE 1992, Annex A)

The competences focus on five elements of practice: subject knowledge; subject application; class management; assessment and recording of pupil's progress; and further PD (DfE 1992). The focus on subject expertise, practical classroom skills and assessment are telling of the Conservative view of the teaching profession at the time, a role for the delivery of knowledge without regard for wider pedagogical understanding. Despite referring to the standards as a sign of 'professional competence' (DfE 1992, Annex A), the statements included provide so

much detail that they suggest little confidence in the teaching professions' ability to perform their role effectively.

The decision to introduce these competences stemmed from the Conservative Government's overall concern with raising the quality of schooling, and therefore of teachers and teaching (Mayes 2012). Just as the National Curriculum allowed the Government to 'set targets for improvement, measure progress towards those targets and monitor and compare performance between individuals, groups and schools' in relation to curriculum content, the competences were implemented to enable the monitoring and control of teacher professionalism (QCA, 1999 p.12). Indeed with its focus on ability and the successful completion of work (OUP 2018), a competence-based approach to professionalism undermines the complexity of the teachers' role by reducing it to technical skills and performance, over knowledge and understanding (Mercier 2014). The competences can be seen as the beginning of a move towards a definition of professionalism which is synonymous with conformity and compliance with Government standards.

Professional Standards Framework

The New Labour Government were quick to make their position on teacher professionalism clear, announcing a revision of the Teacher Competences just two months after coming to power (DfEE 1997). Within circular 10/97 they explicitly confirmed that teaching was a graduate profession, whilst simultaneously increasing the content of the standards from 'simply four or five short statements under each heading ... to 15 to 20, each using more precise and prescriptive language than in the past' (Furlong *et al* 2000). The standards do note, however, the importance of subject specialist teachers at Secondary-level having an undergraduate degree in their subject before training to be a teacher, to ensure that they are suitably knowledgeable and able to respond to queries outside of the curriculum and examination syllabus content (DfEE 1997). This shows an acknowledgement of the importance of teaching as a graduate profession and the benefit of more highly-educated teachers. It is also noted that teachers should understand 'how learning is affected by pupils' physical, intellectual, emotional and social development' (DfEE 1997, p.8). This sets the New Labour standards apart from their predecessors by acknowledging the vital role of pedagogy within the teaching profession. Whilst some of the extensions of the previous competences can be seen as moving in a positive direction for teachers' professionalism, the move towards the new standards was of an increasingly prescribed nature.

This was taken a step further in 2007 when the Teacher Development Agency (TDA), whose remit had been extended by the Government in 2004 to include the development of the school workforce through the creation of professional standards, released the Professional Standards Framework (Pedder *et al* 2010). The framework built upon the existing Teacher Standards by defining 'the characteristics of teachers at each career stage': the award of Qualified Teacher Status (QTS); teachers on the main pay scale (Core); teachers on the upper pay scale (Post Threshold Teachers); Excellent Teachers; and, Advanced Skills Teachers (TDA 2007, p.2). This extension of the prescription of teachers' professionalism calls into question the extent to which the New Labour Government trusted teachers to uphold their professional

and moral standards independently. It can, in this way, be seen as an extension of the work initiated under the Conservative Government over a decade before. That it was felt necessary to provide 102 statements on expected professional conduct demonstrates the extent to which the Government wanted control over defining professionalism in the classroom (Goodwyn 2012).

Teacher standards

Following a review of the professional standards framework (Coates 2011a), the Coalition Government released revised Teachers' Standards in July 2011, to be implemented in schools from September 2012. The review concluded that it was not necessary to provide a prescriptive list of practices for each level of a teacher's career, but rather that 'the standards should provide the parameters within which teachers can identify and address their professional development needs, as appropriate to the role and setting in which they are working' (Coates 2011a, p.7). In an attempt to create a clearer baseline of expectations for teacher's professional conduct, these standards replaced the previous QTS and Core-level standards, whilst the higher-level stages were discontinued, as seen unfit for purpose (Coates 2011b). So rather than five different career stages of content, the one set of standards covers all teaching staff. Reducing the standards to one-size-fits-all guidance could be seen as an attempt to give teachers the opportunity to exercise their professional judgement more in relation to their professional conduct. However, this was seen as a backwards step by many experienced teachers, by undermining their roles and ignoring the professional accomplishments of teachers at all stages of their careers (Goodwyn 2012, Alexander 2011).

The standards are also still very prescriptive. They are broken down into nine sections and so appear less complex than the previous standards, but are actually made up of 42 statements, more than that of the Core standards within the 2007 framework. Alongside the claims to be freeing teachers from Government control and devolving powers to the frontline, whilst simultaneously increasing accountability and monitoring, this suggests a significant lack of respect for the teaching profession. It appears that the Government are claiming what they believe teachers wish to hear, whilst continuing to tighten their grip on the control over professionalism. The new standards are seen as a regulatory tool, one which 'places the onus on the teacher to develop their ability to build active trust with partners in education' (Goepel 2012, p.497). This is potentially a complex relationship as not only are teachers accountable to these partners, but they must also accept contributions to their teaching practices from them. These developments raise serious questions about teacher professionalism, if the role of the teacher is to be so heavily influenced by those outside of the profession, who lack the necessary educational expertise.

2.1.1.3 CPD Provision

Baker Days

Despite major educational reform to the curriculum, routes into teaching and initial teacher training under Thatcher (1979-1990), changes relating to the CPD of teachers were low profile, almost silently conducted (Tomlinson 1997). This may reflect the fact that changes to CPD during this period were likely to be a side effect of the wider reforms taking place, rather than

the focus of them. Nevertheless, the importance of CPD was acknowledged by the Department for Education and Science in the *Better Schools* white paper:

> In-service training has an important contribution to make to the career development of teachers. All teachers need from time to time to avail themselves of such training.
>
> (DES 1985, p.13)

This was followed by The Education (School Teachers' Pay and Conditions of Employment) Order 1987, in which Kenneth Baker ring-fenced five non-contact days in the school year to be used for whole school training. These were officially known as In-service education and training (INSET) days, but were commonly referred to as Baker Days after their creator. It was a positive move to ensure designated time for PD, however, it could be seen as a precursory measure to facilitate the implementation of the upcoming National Curriculum reform, rather than prioritising time for teacher learning. Additionally, instead of long term CPD strategies, 'providers were pushed towards short-termist, 'flavour of the month' approaches' (Tomlinson 1997, p.55). These have been proven to be of little value to lasting educational change, as they do not allow the necessary time for teachers to implement, experiment and reflect on their practice (Cordingley *et al* 2015).

National Strategy for continuing professional development

It was not until 2001, that the very first national strategy for CPD was initiated by the New Labour Government (DfEE 2001). The system was built around the Professional Standards for teaching, performance management and school-led, centrally-funded CPD (Pedder *et al*. 2010). A key driver behind the strategy was the establishment of the National Literacy and Numeracy strategies, aimed at raising core skills across the UK. The Government viewed PD as a powerful vehicle in helping to raise standards under these strategies, demonstrating that once again professional learning was not the driving force behind policy, but rather the progression of other political agendas. Within *Learning and Teaching: a strategy for professional development* (DfEE 2001) the Government also made it clear that they were developing a new form of professionalism for teachers, what they saw as 21st Century professionalism. This involved teachers accepting accountability for their students' outcomes, being open to outside contributions to their teaching and being keen to discover best practices (DfEE 2001; Ball 2013). Much like the teachers' standards that were published under this Government, the documentation talks of working with the profession and of improving teacher professionalism, all whilst taking a tighter grasp of control over every aspect of a teacher's working life.

The TDA, with its new remit to support Initial Teacher Education (ITE) and PD, set out its vision for CPD and created a national database of CPD providers and opportunities in 2009. All providers who shared their CPD programmes on the database were required to sign up to a code of practice detailing expectations for the promotion, planning, delivery, monitoring and evaluation of PD. This was intended to ensure high-quality provision of CPD, with the TDA held responsible for reviewing adherence to the code. The TDA also commissioned a piece of evaluation research carried out by the Centre for the Use of Research and Evidence in Education (CUREE), to determine the quality of the CPD opportunities held within its database.

These approaches acknowledged the need to structure PD better nationally, in order to support schools at a local level. The database can also be seen as an attempt to raise awareness and access to PD opportunities. The project was short-lived and closed under the coalition Government in 2012, meaning that the longer-term effects of such a repository are hard to establish. It was, however, significant enough a resource to warrant the creation of the GoodCPDGuide in 2012, led by the Teacher Development Trust (TDT), explicitly designed as a replacement for the TDA database suggesting that it was a valued resource (TDT 2012).

A world-class teaching profession

Soon after coming to power in 2010, the Coalition Government released *The Importance of Teaching* (DfE 2010), which acknowledged the crucial role that teachers play in the development and success of wider society. It also highlighted the fact that the best education systems in the world ensure that teachers receive PD throughout their career, including opportunities to learn from other practitioners (ibid). The Government then focused their first few years on the expansion of the academies and free schools systems. However, they returned to their interests in the PD of teachers in a research priorities paper in 2013.

> Our ambition is to support the development of a "self-improving" schools system; a system in which teachers take responsibility for identifying and addressing improvement needs (for themselves, their schools, and the system as a whole), and where outstanding teaching practice, based on strong evidence, is built and shared through collaboration and partnership.
>
> (DfE 2013, p.4)

This was followed shortly afterwards, by a consultation on the CPD of teachers in December 2014. The consultation acknowledges 'that the quality of an education system cannot exceed the quality of its teachers' and that in order to meet the goals of *The Importance of Teaching,* research and resources would need to be directed towards teachers' CPD (DfE 2014, p.5). Once more, it can be seen that wider political agendas have resulted in increased interest in teacher development, this time a mixture of global competitiveness and aims to achieve a self-governing and improving education system. To meet these aims, the DfE announced plans to establish a College of Teaching, an independent professional body, alongside a package of measures that would support the development of teacher professionalism. These measures included: a high-profile fund for evidence-based CPD, an online platform of evidence-based best practice and a non-mandatory Standard for teachers' professional development.

The Government's consultation received a number of concerns and criticisms from the field:

College of Teaching

- It was noted that for the College of Teaching to be truly effective, it would need to be teacher-led and separate from the Government (Wellcome Trust 2015).
- Previous research has shown a relative lack of interest in a College of Teaching from the profession (Sutton Trust 2014). Alongside the lack of consensus over the College of Teaching's function, there are concerns that this could lead to the College of Teaching

being open to interference from the Government, unrepresentative minority interest groups and commercial organisations (NASUWT 2015).

High profile fund

- Whilst greater funding to support CPD is welcomed across the board, there are concerns about the apparent focus on Teaching Schools as the main conduit for this funding (Wellcome Trust 2015).
- The effectiveness of Teaching Schools has been questioned, in relation to the quality of their CPD provision (ATL 2015), their access to specialist expertise outside of their own institution (Cordingley 2015) and their coverage of subject specific content and guidance (CfSA 2015).
- It was also noted that schools outside of Teaching School Alliances could be marginalised by the proposed funding structure (NFER 2015) and that the system ignored the high quality CPD existing within schools who do not have Teaching School status (ASCL 2015).

Online platform

- Overall the collation of evidence-based best practice was seen as a positive, however, it was frequently noted that a range of such platforms already exist (Welcome Trust 2015; CfSA 2015; NFER 2015).
- It was felt that it would be of greater benefit to explore why teachers might wish to use a platform (Cordingley 2015) and why existing platforms are not universally used (NFER 2015).

More generally, it was felt by the field that the consultation itself could have been better organised. The short, eight-week consultation period, which included the school winter holidays, was viewed as a lack of commitment to truly engaging with teachers over education policy (ATL 2015). It is true that if the Government intended the consultation as an attempt to mend relationships with the teaching profession, the first step would be to consider the timing within which feedback was requested. NASUWT also stated that the consultation ignored the wider political environment within which the consultation was taking place, emphasising how the deprofessionalisation of the teaching body through the Coalition Government's agendas was 'antithetical to a credible national strategy for maintaining and enhancing teacher professionalism' (NASUWT 2015, p.4). It was argued that this, paired with the use of best practice exemplars from only current Government projects, presents a limited view of the profession. Given controversy over previous consultations and the resulting policies, it is also concerning how this request for feedback was organised, suggesting that responses from the community may not be prioritised as they should.

Nevertheless, the package of measures was underway by July 2015, with the release of a call for evidence on PD best practice (DfE 2015). A year later, the Standard for teachers' professional development was released. It is initially organised into four statements:

1. Professional development should have a focus on improving and evaluating pupil outcomes;

2. Professional development should be underpinned by robust evidence and expertise;

3. Professional development should include collaboration and expert challenge;

4. Professional development programmes should be sustained over time.

Underpinned by the requirement that:

5. Professional development must be prioritised by school leadership.

(DfE 2016a)

The greatest potential of the standard lies in its simplicity, the way that it provides guidance and direction without being prescriptive. There are many forms of PD that respond to the many differing needs of teachers, and the standard needed to be presented in a way that was inclusive of this range of options. It is also careful not to promote any one style of PD above the others, as 'not every form of professional development, even those with the greatest evidence of positive impact, is of itself relevant to all teachers' (Avalos 2011, p.10). A weakness of the standard is its lack of vision or innovation. The Standard is in line with headline findings from the literature around effective CPD, but they do not push boundaries, and they do not teach us anything new about PD. Given the vast insight on PD and learning that the Government had at their disposal, in the form of the consultation responses, it is somewhat disappointing that they were unable to develop a Standard that encourages a more critical, novel approach to CPD.

It is also interesting to consider where less formal, teacher-led CPD, such as TeachMeets, fit within these standards. The implementation guidance refers to education conferences, the closest category to TeachMeet style events, as Indirect Professional Development. This type of CPD is felt to link less clearly to pupil outcomes though may be beneficial to the development of teachers in other ways (DfE 2016b). TeachMeets are an important format of CPD, as research has found that teachers are most likely to trust the advice of colleagues when developing their teaching practice (Judkins *et al* 2014). In this sense, the 'by staff, for staff' model is a crucial one and should not be side-lined. What needs to be discussed is how self-directed, 'indirect professional development' can be situated within a wider, institutional plan for CPD. The Standard also highlights a number of practices which may not be familiar for teachers, such as the evaluation of CPD and accessing relevant educational research. What is clear is that there is an opportunity here, for academics and professionals within education to work alongside schools and teachers to support them in filling the gaps and designing and delivering effective CPD across England. Also, in helping to share examples of existing best practice more widely, to make them easier to access by all schools across England.

2.1.2 Perspectives on professionalism

During such a period of Government intervention into the ownership and control of teacher professionalism, it is unsurprising that the nature of teachers' professionalism is a widely debated issue. The characteristics that define a profession are highly contested, with many

discussions and definitions based on the traditional professions; the church, law and medicine (Millerson 1964). Whilst a consensus on defining a profession has not been reached, there are a number of common features that appear in the literature:

- a profession involves a skill set with a strong theoretical foundation;
- the skill is mastered through advanced education and training;
- mastery is demonstrated through examination;
- individuals within the profession adhere to a code of conduct;
- the profession serves the public good;
- practitioners are organised through a professional association.

(Millerson 1964, p.4)

Within these debates, Hoyle and John (1995) note that teaching is viewed as a semi-profession, and as shown in the previous section, the extent to which teaching now meets these criteria has decreased substantially. Hanlon (1998) views professionalism more as a shifting phenomenon, dependent upon how people choose to interpret it at a given time. It is likely that the perspectives of different stakeholders surrounding a profession will also shift. Here the viewpoints of teaching unions, the Government and academics within the field of education will be discussed in an attempt to scope out the teaching profession.

2.1.2.1 Government

The Government's view of teacher professionalism was most recently shared through *the Importance of Teaching* (DfE 2010). Whilst this white paper was released by the Coalition Government, subsequent policy papers and speeches demonstrate that the current Conservative Government shares this vision (Gibb 2015, DfE 2016). *The Importance of Teaching* (DfE 2010) identifies the best teachers globally as top graduates, trained with a focus on classroom practice. An explicit definition was not given in the paper, however, it did make repeated mention of certain characteristics from which we can infer the Government's principal interests. In particular, the paper identifies three key aspects of a professional: an academically able and high achieving individual; someone with a practical knowledge of teaching skills; and someone with a sound subject knowledge. Here we can see a continuation of the perspectives that drove policy change under the Conservative Government of the 1980s. This was also a continuation of some of New Labour's views on teacher professionalism, including: high achieving teachers, working for the interests of parents and having a strong body of knowledge (Morris 2001). There was a move away from pedagogy as the teaching knowledge base, however, to a focus on subject knowledge, and a removal of the importance of using technology effectively.

The Government views the key concern of teachers as a need to focus on practical classroom skills, rather than theoretical, pedagogic understanding. This is also demonstrated through their interest in recruiting the top performing graduates of specialist subject areas, which makes the assumption that strong subject knowledge is enough to teach effectively, without taking educational and social theories of learning into consideration. Much like the move away from ITE led by HEIs, the move towards practice-focused professionalism is driven by a traditional Conservative distrust of more left-wing teacher educators (Gillard 2005).

These three characteristics were further developed into a more explicit position statement, as the preamble section of the revised Teacher's Standards.

> Teachers make the education of their pupils their first concern, and are accountable for achieving the highest possible standards. Teachers act with honesty and integrity; have strong subject knowledge, keep their knowledge and skills as teachers up-to-date and are self-critical; forge positive professional relationships; and work with parents in the best interests of their pupils
>
> (DfE 2011, p.1).

The statement extends the aspects identified within the 2010 white paper, adding the notion of self-critique, which builds into the Government's interest in teacher accountability; that those working within education are responsible for the development of their learners as well as their own PD. This is reflected in the Conservative 'hands-off' approach, with the Government handing over more responsibility to individuals and organisations in the form of self-management. Interestingly, we can also see some harmony with the Association of Teachers and Lecturers (ATL) statement here, around positive school community relationships. These ideals were continued, with the addition of a focus on evidence-based practice, by the 2016 white paper, *educational excellence everywhere.*

2.1.2.2 Academia

Much of the discourse around teacher professionalism within academia, discusses the state of the profession in light of political or societal circumstances. For example, Whitty (2008) notes that the characteristics of the profession are increasingly dictated by the state in that 'most professionals are now employed, or at least regulated by Governments' (ibid, p.32). He goes on to develop this notion of 'managerial professionalism', which he associates with increased devolution, choice, privatisation, centralised regulation, monitoring and pedagogic prescription (Whitty 2008). Others do not offer their own definition, but rather attempt to explain the situation within the profession. The overall theme across these discussions is that teacher professionalism has, over recent decades, been claimed gradually by those outside of the profession to define and control, introducing new forms of professionalism that pressurise teachers into a performativity culture (Moore and Clarke 2016, Day 2002, Helsby 1996, Barber 2005, Evetts 2012, Evans 2011, Hargreaves 2000).

Pollard (2010) makes his position explicit, however, stating that the teaching profession is built upon a foundation of qualifications, high standards and accountability. It requires specialist knowledge and practical expertise, along with a particular set of values centring on children's development. The report also claims that the development of pedagogic knowledge is key to maintaining teacher professionalism, as it is through the endeavour of acquiring pedagogic expertise that 'teachers are entitled to be treated as professionals' (Pollard 2010, p.5). There is a strong focus in this definition around a teacher's theoretical and specialist educational knowledge surrounding teaching and learning, which is perhaps to be expected from academic authors. The values-based nature of teaching is also recognised in the report, which extends beyond simply serving the public good, as Millerson (1964) noted, to the suggestion that

teachers have specific personal qualities that draw them to the profession. Similarly to the *Teacher's Standards*, Pollard (2010) adds that teachers should engage in reflective practice; constantly reviewing teaching methods based on current research, feedback from colleagues and classroom reception. An important distinction between the two, however, is the use of terminology. Whilst the preamble cites the need to be self-critical, suggesting a fit within the Government's accountability agenda, Pollard's (2010) report uses terms which imply more of a focus on personal development for intrinsic purposes.

2.1.2.3 Unions

Of the three main teaching unions in the UK, The ATL, The National Union of Teachers (NUT) and The National Association of Schoolmasters Union of Women Teachers (NASUWT), only the ATL shares a position statement on professionalism. The ATL (2012, p.1) identify the following six principles of teacher professionalism:

> A desire to continually develop knowledge of learning and learners;
>
> An ability to build positive relationships within the school community;
>
> A strong theoretical knowledge of effective teaching methods to support classroom practice;
>
> An ability to use professional judgement about the curriculum, assessment and pedagogy;
>
> An understanding of the need to balance professional values with the responsibilities of the institution and Government prescribed accountability;
>
> An active engagement in debates on educational practice.

Central to the statement is the application of professional, pedagogic knowledge to support effective teaching and learning in all of its guises. These principles extend beyond the characteristics identified by Millerson (1964) through their focus on community relationships and a commitment to continual engagement in developmental practice. This is perhaps due to the nature of teaching unions, in that they are comprised of those within the field, meaning that their understanding of the teaching profession relates strongly to what it means to be a teacher in practice and not just in theory.

2.1.2.4 What of the teachers themselves?

It is interesting to note that the most prominent voices within this debate are from those outside of the profession itself. Little opportunity has been given to teachers to collectively define their own profession (Swann *et al*. 2010), and this is likely how other voices have come to dominate the discussion. With the creation of The Chartered College of Teaching, however, the profession has an opportunity to have its say. A first iteration of the college's professional principles was published in June 2017 then, following consultation with teachers and school leaders, a renewed version was released in September 2017 (Scutt 2017). The principles developed throughout this process focus on three key facets of teacher professionalism:

- Professional Knowledge
    - Deep subject or specialism knowledge
    - Understanding of subject or specialism pedagogy
    - Knowledge of effective pedagogic approaches
    - Understanding of appropriate assessment strategies
    - Knowledge of current educational debate
- Professional Practice
    - Ability to maintain a positive classroom environment
    - Excellent lesson planning
    - Excellent lesson delivery
    - Ensuring pupils make progress
    - Working effectively with others
- Professional Behaviours
    - Reflective practitioner
    - Engages with career-long professional learning
    - Exhibits collegiality
    - High standards of professionalism
    - Engages with research evidence

(Chartered College of Teaching 2017)

There are a number of similarities here between the college and other stakeholders, with acknowledgement of high standards, specialised knowledge, school community relationships and ongoing professional development. Where the Government, union and academic perspectives differ, the chartered college encapsulates each of these too: the union's interest in continual active engagement in one's own professional growth; the Government's concern with the development of practical classroom skills; and Academia's focus on the importance of a strong pedagogic foundation. Critically, what stands the principles apart from other discussions of professionalism is that accountability is not at the fore here. Whilst high standards and excellence are still considered important, it is not framed within the accountability rhetoric. This suggests that whilst the national debate of teachers' professional status has moved towards a managerial model of professionalism, teachers themselves have maintained their own understanding of what it means to be a teaching professional and these continue to exist, in parallel to the wider debate.

2.2 Professional Development

In order to consider PD of DL in detail, it is first useful to analyse three aspects of PD in general: interpretations; impactful elements; and an overview of the state of CPD in England. Not only will this provide a theoretical and contextual background to the thesis, but it will also begin to open up a discussion of what successful PD may look like. The OECD (2009, p.49) identifies teacher PD 'as activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher'. The definition is kept broad so as to allow for flexibility in how PD is realised, in keeping with the needs of varying countries, schools and staff members.

2.2.1 Interpretations

It has been acknowledged that there are many interpretations of PD, as 'if there was one, reliable, repeatable, universal method guaranteed to produce effective learning then it would

have been defined and replicated by now' (Macfarlane 2016, p.3). When it comes to defining PD, the literature, unsurprisingly, does not reach a consensus. The process of PD is a complex, inherently social and political one suggesting that a consensus is unlikely to be reached (Hardy 2012). The terminology itself has seen many iterations: In-service education and training (INSET), continuing professional development, training, professional learning – just to name a few. In recent years a shift towards professional learning has occurred in some circles, due to the term being perceived as a better representation of what teachers require (Easton 2008).

There is a distinct lack of conceptual clarity in the research area of teacher development (Evans 2002). Given the lack of consensus and shared understanding of what constitutes professionalism, as illustrated above, it is unsurprising that PD is an equally ambiguous concept. It was noted, however, that it was possible to infer understandings of CPD from the way in which CPD was discussed. At first glance, following Evans' (2002) advice may seem a challenge, when so many of the definitions presented are left broad and open to interpretation. For example, following the 2009 Teaching and Learning International Survey (TALIS) the OECD identified teacher PD as 'activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher' (OECD 2009, p.49). Upon closer inspection, however, a number of elements shine out from the literature and the broadness of the definitions is shown to be necessary.

2.2.1.1 Professional Development as a process

Professional development is not simply an activity to be completed, but rather a lifelong process of continual self-improvement (Hardy 2012, Evans 2002). The activity element of PD is in fact only one part of a two-stage process,

> the second is trying out, evaluation, and practice of these new theoretical and teaching ideas over an extended period of time in a collaborative situation where the teachers are able to receive support and feedback, and where they are able to reflect critically.
>
> (Bell and Gilbert 1994, p.494)

The notion of inputting new theoretical ideas, suggests that Bell and Gilbert view CPD as something which is often triggered externally, even if they go on to describe a process which is very much steered by the individual. For much CPD this could be seen as the case. However, less formal development is likely to be triggered by a teacher's own identification of an element of their practice they wish to change.

2.2.1.2 Professional Development as the occurrence of change

Change is a prominent theme throughout the literature. The act of learning about a new approach, technique or tool to support classroom practice cannot be deemed analogous with PD until it has resulted in the transformation of existing practices. Guskey (2002) notes that change is believed to begin with teacher beliefs and attitudes, but this may not be the most effective way to bring about lasting change.

> The crucial point is that it is not the professional development per se, but the experience of successful implementation that changes teachers' attitudes and beliefs. They believe it works because they have seen it work, and that experience shapes their attitudes and beliefs.
>
> (Guskey 2002, p.383)

This may be why 'by staff, for staff' CPD is growing in popularity. If a teacher is able to see that another practitioner has successfully implemented a new practice, it gives them further confidence that it is worth attempting. Given the current accountability climate, where measurable impact is expected in short timeframes, it is easy to see why some staff are reluctant to take on new practices without this reassurance when 'to change means to chance the possibility that students might learn less well than they do under current practices' (Guskey 2002, p.387).

2.2.1.3 Professional Development as continuous

Day (1999) takes the notion of change further, by adding the concept of lifelong learning, that PD is a continuous endeavour.

> It is the process by which, alone and with others, teachers review, renew and extend their commitment as change agents to the moral purposes of teaching; and by which they acquire and develop critically the knowledge, skills, planning and practice with children, young people and colleagues through each phase of their teaching lives.
>
> (Day 1999, p.4)

A teacher's CPD needs are likely to change significantly in the transition from newly qualified (NQT) to more experienced practitioner, particularly if more senior roles, such as head of department, are taken-up. In relation to this particular thesis, CPD as a continuous endeavour is crucial for keeping pace with technological change in the classroom. Practices must be evaluated and updated in relation to the tools and techniques used in order for technology to effectively support teaching and learning. In this way 'engagement in on-going professional learning is a legitimate and necessary part of being a teacher' (McFarlane 2016, p.3).

2.2.1.4 Professional Development as context specific

Professional development is also viewed in the literature as 'intricately connected to the specific and broader social settings and circumstances in which it is undertaken – circumstances which are not uniform' (Hardy 2012, p.4). Indeed, learning is a social practice and so the content, location, timing and participator(s) in the CPD will have a significant effect on the process and its outcomes (McFarlane 2016). The contingent nature of PD is very important as it can influence the success or failure of a CPD programme or activity.

> ...to explain teacher professional learning, one must consider what sort of local knowledge, problems, routines, and aspirations shape and are shaped by individual practices and beliefs. How are these then framed by the other systems involved?
>
> (Opfer and Pedder 2011, p.379)

Teachers' CPD, simply put, is a learning process, meaning that learning theories apply. A clearly relevant theory here, is that of constructivism; that how individuals construct their own understanding of the world and how people learn is influenced by their previous experiences and learning. Richardson (1996) found that three sources influenced a pre-service teacher's beliefs around teaching practice: personal experience, experience with school and instruction, and experience with formal knowledge. There are also links here to social learning theory, as much of a student teachers' understanding of the profession is developed through their observation of role models throughout their own schooling (Bandura 1971). So understanding the context of the school and the individual teacher is key to understanding their individual orientation to learning (Opfer and Pedder 2011).

When PD is considered through these lenses, we can see that it is necessary for definitions to be broad in order to allow for flexibility in how CPD is realised, in keeping with the needs of varying teachers, schools, subjects and even countries. Professional development is a highly personal endeavour which can take many forms:

> It can occur in a brief hallway conversation with a colleague, or after school when counselling a troubled child. To understand teacher learning, we must study it within these multiple contexts, taking into account both the individual teacher-learners and the social systems in which they are participants.
>
> (Borko 2004, p.4)

By allowing for this diversity in the literature, individuals are free to experiment with what works for them, without being confined to a social norm that offers them, and their learners, no personal or professional benefit. In contrast, the Standard for teachers' professional development, devised by the Government, is very explicit about the kinds of professional development that are considered of value, dismissing less formal, more teacher-led strategies as 'indirect professional development' (DfE 2016b)

2.2.2 Effective Professional Development

Having discussed the different interpretations of professional learning, we will now examine the elements of teachers' PD design that have an impact on the success or failure of a programme. Desimone (2009) claims that a consensus exists in the literature around five elements: content focus; active learning; coherence; duration; and collective participation. These elements will be used as a framework, throughout this section of the literature review for analysis. It is important to note here that a number of texts referred to are in themselves reviews of larger bodies of literature.

2.2.2.1 Content focus

Content focus refers to the extent to which PD is related to the teacher's subject area or context (such as SEN), as opposed to generic training. It is widely agreed in the literature that generic training opportunities are often found to be ineffective for the PD of teachers (Birman *et al* 2000, Guskey 2003, Whitehouse 2011, Cordingley *et al* 2015). Teachers are more likely to engage with content which is directly relevant to their subject area as 'different subjects place different emphases on how to integrate pedagogical content knowledge, how to use

assessment information and how students learn particular subjects' meaning that subject specific CPD is more likely to take these nuances into account (Whitehouse 2011, p.6). The literature also suggests that meeting the perceived '*unique* context' of the school is a major influence on the types of CPD that schools engage with (Storey 2009, p.128). Every school has its own unique cultural setting influenced by a range of factors, such as the socio-economic status of student families or special education needs requirements. It is understandable that schools would prioritise CPD that is able to appreciate and work within the parameters of their context. Guskey (2003) also notes that helping teachers to understand the content they teach and how students learn is vital to effective CPD. This calls into question the decision by successive Governments to further remove teacher education from its traditional knowledge base, as illustrated in section 2.1.1 above.

Having reviewed the literature in relation to this element, it could be argued that relevance would be a more appropriate label, as it encompasses not only the subject specific needs of CPD, but also the wider contextual differences between schools that need to be taken into account when designing and implementing a CPD programme. For example, the wider socio-political culture of the school and any specialist provision it might deliver. As Hunzicker states:

> Instructionally-focused professional development is effective because teachers consider the emphasis on subject area content and pedagogy relevant and authentic to their daily responsibilities.
>
> (Hunzicker 2010, p.5)

This aspect is embedded within the relevance of the CPD; staff need to be able to see how the CPD relates to their practice in order to feel that it is worth their time to engage with it.

2.2.2.2 Active learning

Professional development that includes practical experience and being actively involved is believed to be more impactful than other methods, such as a show and tell approach (Birman *et al* 2000). This may occur in a number of ways, including, observation, discussions, sharing of practices, and reviewing student work. Active engagement during CPD is also important in the context of CPD with technologies, where experimentation and play are crucial for learning new systems. Cordingley *et al* (2015) note the additional benefits of having time during CPD to take new practices away and experiment in the classroom, before returning for further support and a chance to reflect on the success of the new approach.

Active learning did not appear explicitly as often in the literature as might be expected. This could be that it is taken for granted that active engagement in a session is necessary, though given that the literature is largely made up of detailed accounts of the aspects that make CPD successful it is assumed that it would be explicitly discussed. Another possibility is that active engagement is considered as a condition of some of the other forms of CPD that are mentioned in the lists here. For example, Stoll *et al* (2012) note that research in this field suggests that effective CPD utilises action research as a prominent tool for learning. Action research requires active engagement in the field and in the approach being trialled throughout the study, meaning that to note that active learning is a necessary aspect may be superfluous.

2.2.2.3 Coherence

High quality CPD includes recognition of how individual programmes of PD align with the needs of the individual, the institution, local authority and wider political reforms. Guskey's (2003) review of the American literature found that the majority of lists, including the National Staff Development Council (NSDC) Standards recognised the importance of aligning CPD with wider school goals. This aspect is closely linked with that of Content Focus or relevance. It is important for teachers to understand the 'rationale underpinning a strategy that is being explored through CPDL, and use that understanding to refine practices and support implementation' (Cordingley 2015, p.5). This is particularly important when CPD is not personally driven by the individual, but rather a whole school initiative that all staff are conscribed to; as is often the case with CPD relating to technology use. By explicitly making connections between individual staff CPD and wider school's needs, staff are able to see how their own development contributes to the school more easily. It is important to ensure, however, that the needs of the individual teacher are not overwhelmed by those of the school, for they are of equal importance and the former is more likely to impact on how well the individual engages with the CPD.

> Combining individual needs with school or district goals, engaging learners from all levels of the school, and addressing teachers' specific learning needs strengthens teacher commitment to professional development and increases their motivation to learn.
>
> (Hunzicker 2010, p.4)

2.2.2.4 Duration

In the literature discussions relating to time focus on two elements: the length of the training activity itself and the extent to which support is sustained over time following the initial instruction to aid staff in implementing new skills and practices. In her presentation of the five elements, Desimone states that whilst the research has not identified a 'golden length' for PD sessions, studies have shown that more positive outcomes emerge from sessions that include '20 hours or more of contact time'. (Desimone 2009, p.184). The literature reviewed here was largely in consensus with the claim that CPD which takes place over a longer time frame is likely to be more effective (Whitehouse 2011, Birman *et al.* 2000, Stoll *et al* 2012). In a review for the Teacher Development Trust, however, Cordingley *et al* (2015) found that in the case of very narrowly focused CPD, shorter time frames like a day can still have a positive impact.

Another common claim throughout the literature, and one which is likely to have great impact on the effectiveness of CPD, is the notion that it is not the length of time that is important, but rather the quality of engagement within any timeframe (Whitehouse 2011, Stoll *et al* 2012, Cordingley *et al* 2015). Guskey's research showed specifically that the length of a CPD session did not positively correlate with an increase in student outcomes. It seems that the structure of the session, how the time is used, is the crucial factor. Sustaining CPD over a period of time and ensuring opportunities for follow up after the initial instruction, and ensuring a recursive process was also shown to be of great importance (Cordingley *et al* 2015, Hunzicker 2010) and

was included as one of the five Standards for Teachers' Professional Development released by the Government (DfE 2016).

2.2.2.5 Collective Participation

Interaction between teachers during PD sessions was found to be a common feature of the most effective CPD (Cordingley *et al* 2015). It is believed that working with other educators provides more opportunities for teachers to engage in active learning and problem solving around their practice (Birman *et al* 2000). Interestingly, as with the duration of CPD sessions, it was noted in the literature that how staff are encouraged to work together is crucial to it having a positive impact on a CPD session. Simply working in unison is not enough to make CPD an engaging experience, collegiality must be built into CPD through well-structured activity to be beneficial (Cordingley *et al* 2015). Guskey (2003) also notes that when not managed efficiently, collaboration can have negative effects, such as conformity within a group stifling innovation and the group blocking of new ideas and approaches. However, it is largely felt that supporting teachers in engaging in professional learning communities, both within the school and further afield, is essential to high quality CPD programmes as teachers value the opportunity to learn from one another (Stoll *et al* 2012, Hunzicker 2010).

Working with others during CPD also offers teachers the opportunity to gain feedback on their existing practices and gather new ideas from their colleagues. As Whitehouse notes, 'teaching is a reflective practice that improves with discussion which challenges personal theories of practice in safe, non-judgemental environments' (Whitehouse 2011, p.7). In this way staff can act as critical friends for one another, to challenge existing preconceptions and provide constructive advice. This kind of collaboration and challenge is further advocated by the Standard for teachers' professional development (DfE 2016), recognising the value of practice related discussion, peer support and the raising of expectations through challenge.

2.2.2.6 Additional theories

Three other aspects: leadership, external expertise, and evaluation, appeared regularly within the literature, suggesting that they too are worth discussing. They are also all included, within the Standard for teachers' professional development, highlighting their perceived importance within the current education policy agenda. Cordingley *et al* (2015) note that involvement of Senior Leadership in PD opportunities varied across projects but was present in all programmes in which teachers made significant changes to their practice. The involvement of leadership in the design, delivery and development of CPD can be seen as an extension of Desimone's (2009) coherence element, in that through the participation of leadership in PD, staff are able to see the bigger picture of whole-school development. Leadership are also responsible for ensuring that the environment within a school is conducive to effective PD. When school leadership see the value of effective CPD and make it central to whole-school improvement, positive change occurs (Stoll *et al* 2012; DfE 2016). This links with Billett's (2001) research which found that support and guidance provided within the workplace was a key factor necessary for successful workplace learning.

Another element believed to bring about lasting change in classroom practice, is that of external expertise. External contributions help to introduce new knowledge and techniques,

informed by theory and evidence, in a way that is accessible to participants (Cordingley *et al* 2015; DfE 2016). CPD providers from outside of the school are also in a unique position to challenge existing practices and stimulate new ways of working (Whitehouse *et al* 2011, Stoll *et al* 2012). Indeed, it could be easier for someone outside of the institution to question existing beliefs and practices and to suggest new ideas, as they could be seen to bring with them experiences from further afield.

The final element that will be discussed here, evaluation, is of particular importance, and it is surprising that Desimone does not include it within her own analyses. It is also an element of PD that is particularly weak within schools, with few institutions having a systematic evaluation process in place (NFER 2015; ATL 2015). In order to ensure the PD works for all stakeholders, programmes must be evaluated in line with school, department or teacher learning needs (DfE 2015). It is also crucial to note that PD programmes need to be designed with impact, or what element of teaching and learning is to be developed, in mind (Stoll *et al* 2012). Evaluation cannot be effective if it is considered only at the end of a programme. Therefore, effective CPD needs to consider the intended outcome for pupils within the design stage of the programme and to work out how this can best be measured. It is clear that schools need to be supported in developing their evaluation of CPD and how it is built into the design of a larger professional learning strategy for the school. There is an opportunity here for academics and professionals within education to work alongside schools and teachers to support them in filling the gaps in designing and delivering effective CPD across England.

As can be seen from this literature:

> it is generally accepted that intensive, sustained, job-embedded CPD focused on the content of the subject that teachers teach is more likely to improve teacher knowledge, classroom instruction, and student achievement. Furthermore, active learning, coherence, and collective participation have also been suggested to be promising best practices in CPD.
>
> (Wayne *et al* 2008, p.470)

What is also apparent is that these individual elements do not make or break PD opportunities singularly, but rather it is the interplay of the eight elements that denotes the success or failure of a programme. There is, however, a growing body of literature that questions whether compiling characteristics of effective CPD into lists is actually beneficial, particularly in relation to predicting teacher learning (Opfer and Pedder 2011).

2.2.2.7 Do lists work?

Guskey (2003) notes that given the varied needs of different school cultures and individual teachers, a one-size fits all list of effective CPD elements may never be possible. Just as definitions of PD recognise the need for diversity, Guskey (2003) acknowledges that its component parts can also vary for different recipients. Instead he claims that focus should be turned towards reaching a consensus on what we mean by 'effective CPD' and by highlighting important elements for consideration, without taking it as far as prescribing the characteristics of the best CPD. In this way schools would be supported in identifying key design criteria,

whilst still free to explore what suits the needs of their teachers and learners best. Further to this, he holds that learner outcomes are the real goal of CPD, claiming that 'significant advances in professional development will come only when both researchers and practitioners insist on the fundamental goal of improvement in student learning outcomes as the principal criteria of effectiveness' (Guskey 2003, p.15).

A number of studies have also focused more specifically on how teachers learn, rather than on the CPD activities themselves. Returning to an earlier thesis, Guskey (2002) claims that in order for teachers to change their beliefs and attitudes, they must first see impact in the classroom. He notes that it is a commonly-held belief that change begins with teachers' attitudes towards a new practice, but notes that for lasting change to take place, it begins with implementation and results in a change in outlook. Opfer and Pedder (2011, p.386) do not dismiss the notion of influential elements of CPD but rather argue that 'we must first expand our causal assumptions about the features of professional development by recognizing that features may collectively work together in different ways under different circumstances in different contexts'. These studies are important as they remind us that PD is not as simple as designing a learning opportunity, it is also crucial to consider the context within which professional learning will take place. Nevertheless, Desimone's elements can still be seen as a useful framework with which to evaluate and further explore CPD opportunities.

2.2.3 Professional Development in the UK

Having considered interpretations of PD and the elements that impact on its success or failure, CPD in England will now be examined. Evidence of the condition of PD in England will be presented via a large-scale research study and more recent accounts from the community. Since the 2010 change in Government, there has been little research around the state of CPD in England. Professional development research often has a specific pedagogic or subject focus, such as interventions in Maths or Science, or investigates on issues more generally, such as the quality of CPD and what elements ensure its effectiveness for schools (Guskey 2003, Cordingley *et al* 2015). As discussed above, this is useful to an extent, however, it tells us little of the current state of CPD in England. The last studies to investigate CPD provision in this country were conducted before 2012.

Significantly this was the year that the Teacher Development Agency was replaced, alongside the General Teaching Council for England, by the Teaching Agency. The Teaching Agency's remit was reduced to focus on three key areas of delivery: supply and retention of teachers, quality of teachers and regulation of teacher conduct (DfE 2012b). The explicit role of working to improve teachers' PD, that had been granted to the TDA in 2007, was no longer a priority. The lack of focus on CPD could also stem from the short lifespan of the agency as it was merged with the National College for School Leadership (NCSL) in 2013, forming the National College for Teaching and Leadership. This quick succession of agencies and remits is likely to be why no large-scale research around PD has been commissioned since the TDA was dissolved, adding to the complication of the current fragmented state of CPD in the UK.

2.2.3.1 Schools and Continuing Professional Development State of the Nation (SoNS) study

The SoNS study (2009) was commissioned by the TDA, to build on its existing evidence base and analyse the extent to which practices and perceptions of teachers' CPD had changed since 2005, when the TDA began their wider role of promoting CPD in the UK (Pedder *et al* 2010). The project acknowledged the complexity of PD, particularly within the accountability climate of the time, and how this could lead to a wide variety of CPD styles. For this reason, the main aim of the study was to investigate the range of styles available, as well the kinds of CPD that teachers were actually able to access, as these may not be the same, and what they participated in most frequently (Pedder *et al* 2010).

The project focuses on three main themes: benefits, status and effectiveness of CPD; planning and organisation of CPD; and access to CPD. These themes complement the existing literature, by generating empirical evidence of the perceived effectiveness of CPD in England, alongside a greater understanding of the experiences school staff are engaging in on a regular basis, as opposed to a wider knowledge of the possible forms of CPD available. Data was collected through the following channels: a review of the literature, snapshots of particular schools using qualitative methods and a national survey. Participants included staff from both Primary and Secondary school settings.

The team found that in general the realities of PD were in stark contrast to the literature. CPD was found to consist largely of one-off events, delivering decontextualised content in a passive manner (Opfer and Pedder 2010b). It is likely that schools are aware that these are not the optimal conditions for professional learning, but given the constraints on teacher time due to the increasing accountability that teachers are subjected to, one-off events are more manageable. There was also little co-ordination in the way that schools planned for CPD, often led by a range of individuals which reduced the coherency of the approach (Pedder and Opfer 2010). Indeed, it was noted that schools often struggled to balance the needs of individual teachers, the school and national policy (*ibid*). Given the rapid pace of change in educational policy agendas over the last decade it is unsurprising that schools are finding it a challenge to match national priorities to the ongoing needs of the local school community.

In addition to the disconnect between learning needs at different levels, there was also found to be a lack of evidence that staff CPD has an impact at school level (Pedder and Opfer 2010). Most CPD was led by the needs of the individual teacher, rather than wider school improvement issues, which led to the impact of such CPD also being smaller. This is not to say that teacher-led CPD is not valuable, but rather that staff should be supported in understanding how their personal development can support learning needs at the whole school level. This is further exacerbated by the fact that collaborative and research-informed professional learning was found to be rare in English schools, reducing awareness of the wider context in which school-based professional learning takes place (ibid).

As discussed earlier in this chapter, there is a vast body of literature surrounding the elements of PD that influence its success, meaning that as a community we now have a better idea of which forms of CPD are likely to be beneficial to teachers. Despite this, the SoNS study found that those PD opportunities most likely to have a positive impact on practice, were the ones

that teachers were least likely to have access to (Opfer and Pedder 2010a). This suggests an important disconnect between educational research and practice surrounding teachers' professional learning. If the elements embodying effective CPD are known, then these should be shared more widely, in a way that is accessible to schools and teachers. Opfer and Pedder (2010a) also noted that access to high quality professional learning could vary significantly depending upon the context of the learner. One only need search an academic database for research pertaining to CPD to see a clear bias towards studies involving the Science, Technology, Engineering and Mathematics (STEM) subjects (Guskey 2003). This could be more challenging for teachers of non-core subjects, such as the Humanities, and those who work outside of mainstream schooling.

Over the last decade it has become increasingly common for CPD to take the form of in-house provision, as it is seen as a good way to utilise internal expertise, is more cost effective, and is more likely to be delivered in a way which is relevant to the needs of the school (Goodall *et al* 2005). Indeed, meeting the perceived '*unique* context' of the school has been found to be a major influence on the types of CPD that schools engage with (Storey 2009, p.128). The SoNS's findings were in line with these conclusions, showing that senior leadership viewed school-based PD as better value for money than other forms (Opfer and Pedder 2010b). Whilst this style does have a number of benefits, there is also the risk that in-house CPD could stifle innovation within a school, if only internal knowledge is relied upon, limiting progress in areas where existing staff knowledge is weaker.

Overall, the study concluded with a largely negative view of PD experiences in England, noting that 'CPD in schools in England is, in the main, erratic, poorly planned and poorly evaluated, and not an articulated, coherent strand of schools' coordinated school improvement strategies' (Pedder and Opfer, 2010, p.449).

2.2.3.2 A world-class teaching profession consultation

Whilst not intended as a way to capture the PD climate in England, and focused around specific and narrow questions, the feedback gained through the recent consultation on PD does provide an interesting picture of more current CPD. Since the consultation responses come from unions, subject associations and other professional bodies within the field, some collating responses directly from teachers (ATL 2015), they offer an up-to-date, realistic view of PD. It should be noted, however, that they are not without their biases. Unsurprisingly, each union, association or charity writes in such a way as to promote the needs of their members and organisation. Rather than diminishing the quality of the feedback, however, the amalgamation of the consultation responses presents a rich picture of the needs of many groups within the teaching community. The consultation focused largely on reactions to the Government's proposals, however, it began with questions concerning barriers to high-quality CPD and current techniques for the evaluation of CPD in schools. Answers to these initial questions can throw some light on the current state of CPD in England.

The consultation highlighted a number of barriers to high quality CPD, the most common of these were also prevalent in the literature: time and funding. Schools often struggle to find time on top of existing workloads for meaningful CPD (ATL 2015, CfSA 2015, NAHT 2015). For

teachers to learn deeply, sufficient time needs to be given for staff to reflect on existing practices, learn about new approaches and consider how these might fit within the current practice. There may also be hidden costs included to releasing staff for CPD, such as cover and the provision of high quality mentors (ASCL 2015). These challenges are further complicated by restricted school budgets (Wellcome Trust 2015, NFER 2015). Inability to afford the range of necessary, expert-led, professional learning opportunities can sometimes lead to schools instead spending budget on generic CPD, which has little impact for individual teachers (NAHT 2015). This could also be responsible for the rise in school-based CPD that relies on internal expertise.

Generic PD poses additional problems within Secondary-level education, as it can sometimes be hard for teachers to translate generic skills into their specific teaching context (ATL 2015). This stems from a larger issue around poorly planned and implemented CPD (ASCL 2015). For professional learning to be effective, it needs to address the needs of the individual teacher and their pupil's learning. This particular element of CPD was found to be lacking across the board in the consultation responses (Cordingley 2015, CfSA 2015, ATL 2015, ASCL 2015, NFER 2015). One of the possible causes for the inefficiency of CPD planning in England, is the frequent changes to education policy by successive Governments over the last few decades (NAHT 2015). This has resulted in many CPD opportunities being dominated by guidance for meeting the latest political agenda. It has also been noted that this continuing need to meet external demands through CPD has led to many schools panic purchasing quick fix development programmes in an attempt to meet policy demands (Cordingley 2015).

These problems around strategic planning and organisation of CPD extend to its evaluation. As noted earlier in this chapter, the literature suggests that schools require significant support around the effective evaluation of CPD activities (Stoll *et al* 2012). This was confirmed by the consultation responses. In a survey of CPD experiences, the ATL found that only seven per cent of teachers had participated in PD that was evaluated against pupil learning objectives (ATL 2015). Evaluation of CPD was often found to focus on staff outcomes and feedback on the session (NFER 2015). There are examples of effective practice, and these show how the use of follow up contact with staff to reflect on the longer term impact of CPD and the explicit discussion of impact during CPD activities can be beneficial (Cordingley 2015). Unfortunately, the overall picture of PD evaluation across England is one that lacks consistency of approach and quality (ASCL 2015).

What can be seen from these two snapshots is that PD in England requires a higher status of priority and a more strategic approach to organisation. As noted in section 2.1.2, the approach by successive Governments towards the CPD of teachers has been to push initiatives only where they will reinforce existing education policy agendas. In this way, they can be seen as modelling the bolt-on approach to CPD and its evaluation. If schools are to be adequately supported in the organisation and evaluation of PD, the Government needs to demonstrate positive ways in which this can be done. The recent package of measures presented by the Conservative Government holds some potential to work on this issue, though only by working

with the teaching community, in response to their feedback on existing CPD, will it be successful.

2.3 Digital Literacy

In order to discuss DL CPD opportunities for school staff in England, it is first necessary to provide an explanation of what DL entails. The exact nature of DL is widely debated, however, this will not be focus of this thesis. It is of far greater value to concentrate the discussion around DL specifically within education, and DL for teachers in particular.

2.3.1 The proliferation of digital literacy in education

Over the last decade a significant increase in interest around DL has been seen, within national and European policy as well as industry. In 2006, the European Council identified digital competence as one of its eight key competences for lifelong learning. In this context digital competence relates to 'the confident and critical use of information society technology (IST) and thus basic skills in information and communication technology' (EU 2006, p.1). The key competences acknowledge that DL is an essential skill, not only during compulsory education, but across all ages if citizens are to be positive, productive and active members of society. The real driver behind the rise in DL, however, is not the lifelong self-development and engagement of citizens to improve quality of life, but rather the need to meet the demands of the global economy, where the rise of the white-collar worker and the increasing digitisation of many careers has put new demands on the workforce (Sum and Jessop 2013, Brown *et al*. 2010). In reality, it seems that what Governments are realising is that the development of DL skills are crucial to remaining key players in the global marketplace.

Nevertheless, the digital competence agenda initiated a number of studies around DL and has also been continually developed by the Institute for Prospective Technological Studies (IPTS), with a digital competence for students framework (Digcomp) released in 2013, an educational organisations framework (DigCompOrg) released in 2015 and a new framework for educators was released in December 2017 (DigCompEdu). Of particular interest is the appreciation for the 'virtuous circle' that can be achieved by focusing support in three main areas: teachers; learners; and the organisation (see below). Supporting development at each individual level feeds back into the circle improving development overall. Given the abundance of frameworks and resources for institutional and learner DL, it is reassuring to see that teachers' own DL is being highlighted as important to overall development, even if it has taken the IPTS ten years for a teacher's framework to be considered alongside their other frameworks.

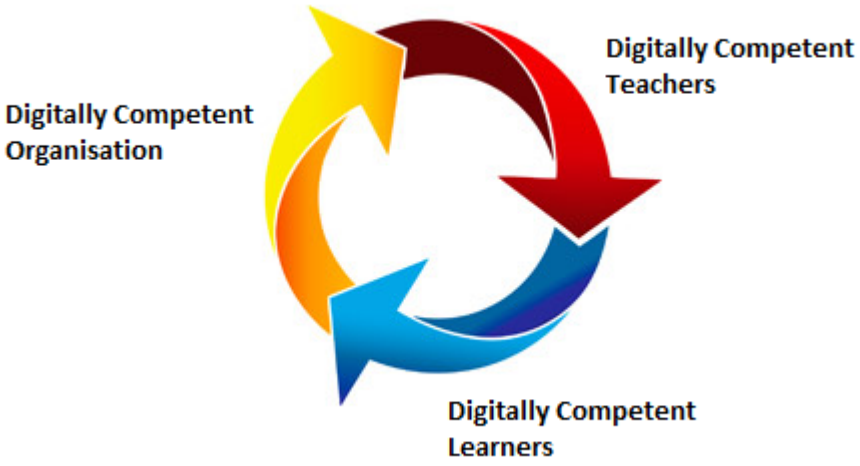


Figure 2.1 DigiComp Virtuous Cycle (EU Science Hub 2017)

2.3.1.1 Digital skills

In the UK, the profile of DL has explicitly been raised through its links to business, industry and the economy. This began with the *NextGen* report released by the National Endowment for Science, Technology and the Arts (NESTA) in 2011. Livingstone and Hope (2011) concluded that whilst the UK had been leaders in the video gaming and special effects industries for some time, new graduates were entering industry lacking the necessary digital skills to maintain the UK's leading position. This lack of skills and knowledge was viewed as a failing of our education system, particularly in how it developed and encouraged digital skills.

Specifically, the report found a misalignment between the skills acquired through schooling and higher education and the skills required in the industry. Livingstone and Hope (2011) made 20 recommendations spread across schools, further and higher education and in-service training and CPD. The first of these was to 'bring computer science into the National Curriculum as an essential discipline' as the existing Information and Communication Technology (ICT) subject area was viewed as insufficient for meeting the needs of more technical career paths (Livingstone and Hope 2011, p.7).

Whilst the report focuses largely on technical skill development, as opposed to DL directly, it is can still be seen as an important milestone in the development of DL policy here in the UK. The report was among the first to note the failings of the existing ICT curriculum, and to suggest a renewed curriculum with a focus on more computing-based practices. This opened up wider discussions around the curriculum and paved the way for future reports and recommendations.

Shortly after the release of the *NextGen* report, The Royal Society (2012) released its own investigation into the provision of computing education across the UK. *Shut Down or Restart?* was prompted by concerns raised from a number of stakeholder groups, including schools, further and higher education institutions, business and industry. Much like Livingstone and Hope, The Royal Society found the existing delivery of computing education to be 'highly

unsatisfactory' (2012, p.5). It also called for a review of the existing curriculum, but highlighted the importance of having specially trained staff to deliver the new curriculum as well since it was believed that many of the individuals currently teaching ICT were not sufficiently skilled to teach computing.

The report also differs from *NextGen* in its acknowledgement of DL as part of the computing curriculum, one of three strands that were viewed as contributing to the subject. According to the report, 'Digital literacy should be understood to mean the basic skill or ability to use a computer confidently, safely and effectively…' (The Royal Society 2012, p.17). On the surface, this definition is not too dissimilar to those prevalent in the literature, however, despite noting that DL is a core skill that needs to be taught, the breakdown given in the report goes on to list merely Office package skills, such as word-processing, database creation and use of email. The society appears to miss the importance of critical and creative thinking underpinning the use of technology, which lies at the heart of DL. It is a positive move that the report calls for DL to be viewed as analogous to literacy and numeracy, but it should then be discussed as the same style of foundational knowledge, not simply a set of basic skills.

Just two years later, the UK Digital Skills Taskforce (2014) released an independent report into the challenges of the UK's economic future in respect to digital skills. The report noted that digital skills are not simply a requirement of jobs within the technology sector, but are in fact becoming crucial to all areas of the economy as more and more businesses make use of computers and the internet. Analysis by Mairs (2014, cited in UK Digital Skills Taskforce 2014) found that over 93 per cent of UK jobs now require at least basic DL, highlighting the importance of ensuring that all citizens are supported in developing these skills. Much like the *NextGen* and *Shut Down or Restart?* reports, the UK Digital Skills Taskforce (2014) recommend that computing be treated as a core skill, but take this further by acknowledging the need to maintain an equal balance between the areas of content within the curriculum noted by The Royal Society, to ensure that a heavy focus was not placed on computer science skills alone.

Additionally, in 2015 the House of Lords Select Committee on Digital Skills released *Make or Break: The UK's Digital Future*. This report follows along a similar vein to its predecessors, though with a stronger focus on DL as a vital component of wider digital skills. The report claims that 'the Government has a responsibility to accelerate the attainment of digital literacy across the population' (Select Committee on Digital Skills 2015, p.9). It clarifies this position further, by noting that DL is important because it supports the development of other subject knowledge and a wide array of careers. Of particular importance for this thesis, the Select Committee on Digital Skills also note the importance of supporting teachers in DL development, if we are to prepare students for their futures successfully.

2.3.1.2 Computing Curriculum

Alongside these independent reports, and very much influenced by the needs of business and industry, the Secretary of State for Education, Michael Gove, announced in 2012 the withdrawal of the existing ICT Curriculum. Speaking at the British Education Technology Tradeshow (BETT), Gove stated that the current curriculum was insufficiently preparing learners for the future, adding that feedback from schools, teachers and industry showed that

the existing curriculum was 'too off-putting, too demotivating, too dull' (Gove 2012b). In response, the ICT curriculum would be replaced by a new computing curriculum from 2014, following a period of consultation.

The final Computing programme of study (PoS) comprised of three main strands: computer science, information technology and digital literacy. The DfE noted that alongside traditional ICT skills and newer technical knowledge, 'computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world' (DfE 2013b, p.1). The inclusion of DL within the new curriculum demonstrates the increased awareness of its key status amongst core skills within education.

The new PoS was not implemented without its critics, with many pointing out the lack of balance between the three elements of the curriculum. An analysis of the PoS was carried out, which highlighted an imbalance in content, particularly at key stages 3 and 4, resulting in little coverage of DL, despite it being noted elsewhere as a crucial life skill (Twining 2013). What little references are made to DL result in a limited definition of what it means to be digitally literate (Webb 2013). This fails to acknowledge the critical skills at the core of DL, and the fact that many view it as an approach and an attitude to technology use, as opposed to merely a set of competences. Given the recommendations noted from previous reports, we can see that the final PoS failed to meet these basic requirements, instead presenting a curriculum that is balanced heavily towards programming skills.

It is also important to note that despite explicit recommendations to acknowledge the importance of highly trained educators, the support for teaching staff in how this can actually be achieved is still lacking (Payton and Hague 2010, The Royal Society 2017). If educators are to successfully support the development of DL practices, they require guidance too. In particular, the lack of consensus around what DL is highlights how confusing it could be for a teacher to clarify how it might translate into the classroom. Previous research in the area has shown that this lack of support and guidance has left many teachers feeling uncertain and unprepared to aid the development of their students (Payton and Hague 2010). An explicit definition of DL, specifically for teachers and educators, would help to bridge this gap and enable staff to turn the notion of DL into practice.

2.3.2 Defining Digital Literacy

Digital literacy is a highly contested term, with many competing and sometimes conflicting definitions. This is not surprising given the wide variety of competences and media that DL is seen to contain. Within the literature elements of DL are often referred to under a host of other terms, which may overlap or even be synonymous with the concept; such as media literacy (Center for Media Literacy 2016), information literacy (Bent and Stubbings 2011), technology literacy (Erstad 2008), web literacy (Chung et al 2016), ICT literacy (Educational Testing Service 2006, cited in Martin 2006) and E-literacy (Kope 2006). The term is also confusingly used to refer to a digital form of traditional literacy, as opposed to a more complex

knowledge and understanding of the use of technology (Merchant 2007). A consensus has not even been met over the single or plural status of the term (Kellner 2002, Belshaw 2011a).

Martin (2006) believes that this multiplicity of interpretations is inevitable and necessary, stating that if we were to find one iteration of DL then its 'voice will be that of the powerful, the institutional and the wealthy' (Martin 2006, p.18). Whilst many definitions can prove unhelpful when attempting to pin down the concept, they reflect the reality of society and the differing perspectives and needs of various groups. To particular groups, such as teachers, this is especially important given the unique nature of their role within society, and as such their use of tools and practices to support their work.

Lankshear and Knobel (2015) identify two kinds of definitions within the field. Firstly, conceptual definitions which often offer broad, generic interpretations. A good example of this is the widely popular definition provided by JISC which identifies DL as 'the capabilities which fit an individual for living, learning and working in a digital society' (2014, p.1). These definitions are useful as a basic introduction to the concept of DL but can often be too vague. Standardised operationalisations are the second category, themselves often differentiated into either basic technical skill lists or standards focusing upon understanding and behaviour. Standardised lists can be prescriptive and limiting, often oversimplifying the complexity of DL, however they do offer a clearer indication of the practices involved within the concept. The Education Testing Service (2002)developed such a list of basic skills:

> *Access*: knowing how to collect and/or retrieve information,
> *Manage*: applying existing classification schemes,
> *Integrate*: interpreting and representing information,
> *Evaluate*: making judgements about the quality of information,
> *Create*: generating information by adapting, inventing or authoring information.
>
> (cited in Martin 2006)

These two distinctions can be useful in providing an overview of the debate surrounding dig DL, however, the identification of these as separate styles of interpretation suggests that only one such category of definition is useful at a time. In the context of this thesis it is useful to consider both models: a conceptual definition to provide context and overview; and an operationalisation to support the transfer from theory to practice. Therefore, rather than continuing to focus on these groupings, the concept of DL will instead be discussed, through the existing literature, in relation to the author's own interpretation. Firstly, a general explanation of DL will be presented, followed by understandings of the term which focus specifically on the needs of educators.

2.3.2.1 Digital literacy for all

The first representations of DL were often broad and did not refer to specific technologies. This is perhaps why the work of Lanham (1995) and Gilster (1997) is still relevant today, despite major technological advancements since the late 1990s, including the advent of Web 2.0. It is also due to their belief that DL is an approach to technology use and that its focus is on ideas not technical skills (Gilster 1997). This position is also taken by a number of later writers

(Johnson 2008, Ng 2015) some of whom take this notion further to state that a key element of DL is the ability to know when not to use digital resources (Bawden 2008, Hague and Payton 2010).

This position statement hints at one of the primary elements of DL, critical thinking. Used within the context of DL, critical thinking is multifaceted, though it is most often related to the ability to cope with the abundance of information and media available online and to make careful judgements about what data and information to use in a given situation. It also refers to what Martin (2006) calls the reflection stage of literacy, the point at which one begins to focus on the why and how of using technology, not simply the when and what. Being digitally literate means that an individual is able not only to locate information and resources to meet their needs, but also to ascertain which will be most effective in doing so.

Many interpretations discuss the power of DL to support one's participation in society (UNESCO 2011, Hague and Williamson 2009, Martin 2006). Indeed, it is with this view in mind that Governments across the globe have shown great interest in DL in recent years, as it is seen as a necessary trait for citizens who are able to contribute to society. UNESCO (2011) explicitly state that DL is a gate skill, granting access to greater participation in an increasing online society. In this way it is viewed as equal to traditional foundation skills such as literacy and numeracy, a quality that has also recently been echoed by the UK Government (SDSC 2014). Given the growing prevalence of technology within all aspects of modern life, it can be seen that a certain level of confidence in this area is a necessity if one is to meet one's own needs.

It is important to note, however, that individual needs vary meaning that their DL is also constantly shifting, embedded within the social and cultural context of its application (Erstad 2008, Bélisle 2006). Erstad (2008, p.184) goes on to note that in order 'to understand such processes we have to look at the different contexts where literacy is practiced and given meaning'. In this way DL is studied in relation to practice, rather than the technocentric approach that some other definitions lean towards. This perspective also emphasises how DL can be seen as crucial to support an individual in meeting their own needs (Welsh and Wright 2010). Through it we are able to apply technological tools to any situation in order to react to problems and challenges. This also highlights the importance of specifying what DL may look like within different contexts, as from this perspective DL for a teacher must be different from DL for a student or a member of the general public.

Belshaw (2012) claims that it is this context dependency that makes the possibility of a one-size-fits-all DL unrealistic, that instead we should focus on the essential elements that make up DL. Though whilst a one-size-fits-all definition may not be possible, or even helpful, that doesn't negate the potential usefulness of more specific interpretations. Much like Lankshear and Knobel's (2015) two categories of definition, the idea that this diversity should mean that more specific, context dependent definitions are equally unhelpful fails to acknowledge that for some individuals a more specific interpretation could act as guidance towards understanding something new.

As DL is seen as a response to one's daily challenges, its development can be seen as an ongoing process (Ng 2015, Bélisle 2006). Digital literacy is not a threshold, or something that one does or does not possess, but rather is a set of skills and mindsets that are in a constant state of development (Belshaw 2011a, Parker 2016). This notion fits well alongside the view of DL as context dependent, as one's level or confidence in their digital ability will change as the nature of their needs changes. For example, in leaving university and beginning a career in research, the DL skills needed will differ and so the individual's confidence will develop as new practices are learnt.

Responding to challenges and being able to apply DL in a range of contexts requires creativity with technical tools and practices. The answer to a problem may not always be presented as a whole, but rather one may need to bring together a range of resources, in multiple formats, from a diversity of sources to create a solution. When we look at the qualities discussed above, the ability to make use of tools and practices to meet one's own needs, the creative and critical use of technology, its development by degrees and its fluidity in relation to real life situations, we can see that DL is not merely a set of skills or attitudes, 'digital literacy is in this view an element in the ongoing construction of individual identity' (Martin and Grudziecki 2007).

2.3.2.2 Teacher's digital literacy

There are other definitions available (Gillen and Barton 2010, Littlejohn et al 2012, Kløvstad *et* al. 2005, The Royal Society 2012, DfE 2013b, Martin 2008), though these examples provide an overview which is both brief and encompassing of the range of interpretations. There is, however, still a dearth of information to support school staff in understanding how best to integrate DL into their teaching practice. This is possibly due to that fact that within the field, DL for teachers is seen as more complex than within other occupations or amongst the general populace (Krumsvik et al 2016). A number of attempts have been made, however, and these will now be discussed below.

In Norway, DL has seen a significant increase in importance, starting with a four-year programme to support DL for all between 2004-2008 which led to Kunnskapsløftet, The Knowledge Promotion, a major reform to the curriculum beginning in 2006 (Belshaw 2011b). The Knowledge Promotion identified DL as one five core skills, including the more traditional reading, writing, oral and arithmetic skills. In light of these developments, research began to consider the role of DL for teachers.

> 'Digital literacy for in-service teachers is the ability to use digital artefacts as an integrated part of their pedagogical content knowledge and be aware of what implications this has for teaching, learning strategies and Bildung aspects'
>
> (Krumsvik 2007, cited in Almås and Krumsvik 2007, p.484)

Bildung is a German term, which refers to the development of an individual as whole. Krumsvik (2007) uses this term to label the highest level of teacher digital competence, Digital Bildung, to represent the way in which an educator makes use of technology in all aspects of their

professional life. In a later paper, Krumsvik et al (2016) return to views of DL specifically for educators and begin to break the interpretation down into the following main aspects:

- Generic digital competence – the mastery of general educational technology skills;
- Subject didactic digital competence – applying educational technology to their subject context;
- Professional digital competence – including work outside of the classroom that still falls within their professional remit.

This breakdown is interesting in the way that it looks at DL within the different elements of a teacher's role, however, these are still rather broad and general interpretations. Krumsvik et al (2016) acknowledge themselves that there still exists a gap between theory and practice and how the former translates into the later. It is this specific issue that the DigiLit Leicester Project sought to address. Creating a self-evaluation framework for secondary school staff in the Leicester, the project team devised the following explanation of how DL translates into the classroom:

> Digital Literacy refers to the skills, attitudes and knowledge required by educators to support learning in a digitally-rich world. To be digitally literate, educators must be able to utilise technology to enhance and transform classroom practices, and to enrich their own professional development and identity. The digitally literate educator will be able to think critically about why, how and when technology supplements learning and teaching.
>
> (Hall *et al* 2014, p.53)

A balance is struck here, between the broad and the specific, by offering areas of practice within which DL is implemented without being prescriptive. This allows individual school staff to interpret this guidance in the most suitable way for the needs of their learners, subject and school. The DigiLit Leicester Project also identifies six strands of practice, which are believed to make up DL for school staff.

- *Finding, Evaluating and Organising*: how educators make use of tools to locate appropriate resources and information to assist their teaching.
- *Creating and Sharing*: how tools are used to make new resources, remix existing documents to suit specific classroom needs and how these can then be shared themselves; both internally and externally.
- *Assessment and Feedback*: the use of technology to support the assessment process, including models of teacher-feedback, peer-feedback and self-reflection.
- *Communication, Collaboration and Participation*: how social media and web 2.0 can be utilised in order to enhance the learning experience.
- *E-Safety and Online Identity*: how educators can support students in becoming positive, responsible users of technology, and also how they can best represent themselves professionally online.

- *Technology-enhanced Professional Development*: how school staff can take advantages of the affordances of new technologies to support their own professional development.

During the project a self-evaluation framework was developed, creating sets of statements within each of these six areas. The team note that these statements are 'designed to raise awareness of the skills and practices that exist', rather than be a prescriptive list of skills that all staff must accomplish (Fraser *et al* 2013, p.17). What these strands represent are recognisable areas of existing practice within Secondary-level teaching, situating the notion of DL within a familiar setting for those members of staff less confident in their current practices. The statements are also explicitly social in their reference to working alongside learners and colleagues, highlighting the collegial and democratic nature of DL and encouraging staff to turn to their peers and learners for support in developing these practices (Hall *et al* 2014).

2.3.3 Prior Professional Development for digital literacy

Whilst DL is becoming a key debate within education (British Computer Society 2015) the focus is primarily on developing young people's DL in order to prepare them for living and working in modern society. There have been only been a few examples of projects designed specifically to support teachers in developing their DL skills and practice, and these will be discussed below. In particular, the outcomes of the projects will be considered, in terms of resources developed and key lessons for PD.

2.3.3.1 FutureLab

The first project is the Futurelab Digital Participation project, which ran from 2009-2011 and worked with students and teachers from eight primary and six secondary schools in England. The project aimed to 'support and enable practitioners to start developing informed strategies to promote digital participation in real school settings' (Hague and Williamson 2009). The programme worked with schools to explore how DL might be implemented within different areas of the curriculum and utilised BECTA's framework to identify components of DL. It is important here to note that the focus of the framework, and the programme as a whole, was not on the teachers own DL, but rather how they could support their learners' development.

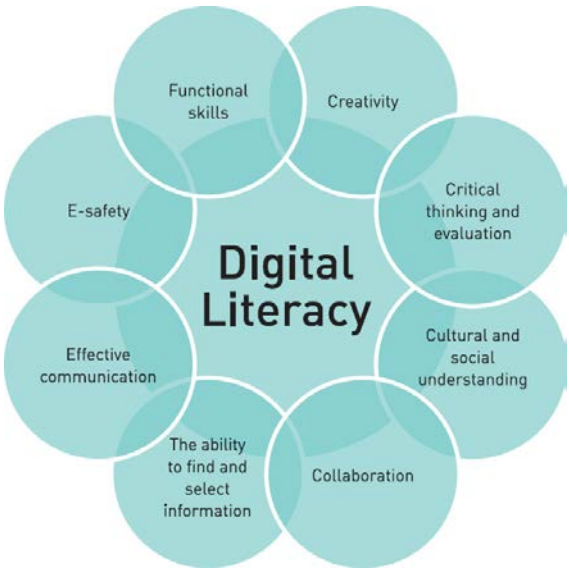


Figure 2.2 BECTA's Components of Digital Literacy

The two main outputs from the programme were published as a set of case studies and a handbook. The handbook provides discussions around pedagogy related to embedding DL within day-to-day teaching, alongside practical tips and advice (Hague and Payton 2010). The case studies provide examples of tested practices that other staff can adapt and reuse. Futurelab aimed for the two resources to work together to 'support teachers by sparking ideas, giving confidence and stimulating further thinking around developing classroom approaches that advance both digital literacy and subject knowledge' (Payton and Hague 2010, p.4).

There are two key lessons to be learnt from the Digital Participation programme.

1. The teachers involved in the project were mixed in their confidence and ability, and also in the amount of technology they had available to them, yet all were able to successfully carry out their projects. This supports the claim that DL is about the approach, not the device, and shows that all teachers have important skills to share with their students in their use of technology.
2. It is noted in the Handbook (Hague and Payton 2010) that time for staff to embed new practices into their existing work is key to successful implementation. This links back to the research around PD referenced above, and the importance of allowing staff time to apply new practices. CPD sessions can sometimes be as short as 30 minutes, which would suggest that they are unlikely to support staff in changing their practices.

2.3.3.2 DigiLit Leicester

Whilst the Futurelab project does appear to have had an impact, and created a number of resources, the focus is still split between learners and teachers. The second project under review, the DigiLit Leicester Project, focused solely on school staff. DigiLit Leicester was a two-year partnership between Leicester City Council, De Montfort University and the 23 city secondary schools being rebuilt or refurbished as part of the BSF programme. The project ran

from 2012-14 and aimed to support school staff in developing their DL skills and confidence through the use of a self-evaluation framework (see figure 2.3 below). The Framework was intended as a self-reflection tool to aid staff in identifying their current level of practice and then highlighting areas in which they wanted to progress.

Figure 2.3 - DigiLit Leicester Framework Strands (adapted from Fraser et al 2013)

Over the course of the two years, the project engaged with all 23 BSF schools. The DigiLit Leicester team organised six events and projects over the course of the partnership, whilst schools led on 21 projects. The framework strands and content helped to raise awareness of potential practices and create a shared understanding of DL in the classroom, gaining both national and international acclaim (ALT 2014, MIT 2013). Through comparative analysis of survey responses, the team were also able to identify a statistically significant change in staff confidence between 2013-14 (Atkins *et al* 2014). Levels achieved increased in five of the six key areas (excluding *E-Safety and Online Identity*).

Again, there are two key lessons to take away from the project.

1. DigiLit Leicester is committed to open practices - 'efforts by individuals and organisations across the world to use the Internet to share knowledge, ideas, teaching practices, infrastructure, tools and resources, inside and outside formal educational settings' (Neary and Winn 2012, p.406). This commitment enables others to replicate successful projects within their own teaching context. DigiLit released openly licensed

reports, and also shared the framework openly for others adapt to their own needs. This links to the Futurelab project's desire to allow teachers to tailor resources to their existing practices. By releasing all materials associated with the project under an open license, the DigiLit Leicester team are supporting staff in a multitude of roles to take tried and tested projects and remix them to suit their own purposes.

2. The DigiLit Leicester project also highlights the important role that Higher Education can play in supporting school staff PD as it is through the partnership of De Montfort University and Leicester City Council that the project came to fruition. The University's expertise in research enabled schools to lead their own small-scale projects with the help and guidance of the project team. The impact of the project at a school level has also supported the university in developing a similar approach aimed at lecturers.

2.4 Chapter Summary

Some important themes have arisen from the three core topics related to this thesis. Examining the changes implemented by successive Governments over the last twenty years, it can be seen that a key policy agenda has been the enforced compliance of teachers to each Government's reform agendas (Pedder et al 2010). This view supports Fournier's (1999) claim that professionalism is a disciplinary mechanism, used to encourage individuals to demonstrate *appropriate* work practices and identities. Whitty (2008), however, sees these changes as an opportunity for teachers to move into a phase of democratic professionalism, where teachers are more open and transparent about their practice and more inclusive of external parties. It can be seen that digital tools have the potential to greatly facilitate this move, developing online professional communities via social networking sites and supporting the growth of home-school relationships through parental engagement services that streamline the home-school communication system (2Simple 2015). These developments highlight the importance of staff DL in engaging with the move towards a new form of professionalism.

Professional development will be crucial in supporting this transition, which raises further concerns for the current state of CPD in the UK. Following the removal of national support for teachers' PD, through the abolition of the TDA, provision has become increasingly fragmented and varying in quality. What research and evidence shows is effective, does not correlate with what is provided in many schools (Opfer and Pedder 2010). The abolition of BECTA has further complicated this issue in relation to DL development as the national support organisations for teacher development and education technology no longer exist. Within this context, many schools do not know where to find appropriate DL CPD programmes and resources. Given the accompanying lack of guidance on how DL translates into classroom practice, teachers are in a position which is stacked decidedly against them.

3. Methodology

The research question aimed to investigate how current strategies for the PD of teachers support them in developing their DL. The researcher also intended to ensure that teacher voice was utilised throughout the study, to give appropriate importance to their expertise in this area. Therefore, a qualitative approach was taken in order to develop theory from the experiences and knowledge of existing school staff. In particular, a constructivist grounded theory methodology was applied, since no hypothesis was to be tested. The focus was primarily on staff experience, and a constructivist approach allowed for greater recognition of the role of the researcher as a co-constructor of the research. This chapter presents the research design journey that was taken, along with discussions of the design choices made.

Dyson and Brown (2006) identify five conceptual levels of research design:

- research philosophies, the researcher's epistemological standpoint;
- methodological criteria, the reliability and validity of the study;
- research strategies, the broad organisation of the research design;
- research methods, the techniques employed to collect data; and
- data analysis, the techniques used to interpret the data.

The structure of this section will follow Dyson and Brown's (2006) levels, with one small adaptation (see fig. 3.1). Consideration of the methodological criteria for this study will be explored at the end of the discussion on methodology as it is felt that this is a more appropriate arrangement, given the ability of research strategies, methods and analysis techniques to affect the types of reliability and validity that can be associated with a study. For example, whether a study design focuses more on a quantitative or qualitative strategy will affect the way in which reliability and validity can be explored. This chapter will also conclude with a consideration of the ethical implications of the research.

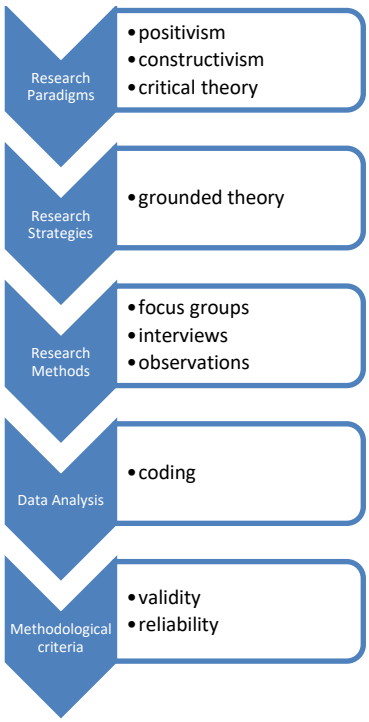


Figure 3.1 - Levels of research design (based on Dyson and Brown 2006, p.3)

Dyson and Brown (2006) note that it is advisable to begin by subscribing to a particular philosophical stance as this has the greatest effect on the approach taken to research design. Birks and Mills (2015) agree that it is key, within the early stages of planning a study, to acknowledge one's assumptions as a researcher, including the stance from which one begins one's work. This was particularly of use to the researcher, as an early career researcher, as it helped to shape later decisions and provide some structure to the research design process.

3.1 Theoretical Assumptions

Paradigms, within the context of research design, are a set of ontological and epistemological assumptions made by the researcher, pertaining to the focus of a study and how it can be understood (Hammersley 2012). In this way, a research paradigm is viewed as the overall theoretical research framework (Kuhn 1996). They are used to distinguish between the different world views and philosophical standpoints of researchers, and help to illustrate the theoretical foundation from which a research study has been designed. This study is influenced by the constructivist paradigm, as outlined by Guba and Lincoln (1989).

Alignment with any one paradigm, requires the consideration of three main questions regarding the nature of inquiry.

1. The ontological question - what is the nature of reality?
2. The epistemological question - how do we know something?
3. The methodological question - how do we go about discovering knowledge?

(Guba 1990)

Together, these three questions unearth how we view knowledge, how we see ourselves in relation to that knowledge, and the methods we employ in order to discover it. The

constructivist belief system is informed by a relativist ontology, a subjectivist epistemology and a hermeneutic methodology. These positions will be elaborated upon below with reference to the main opposing viewpoint, positivism, where appropriate. The table below summarises the two key paradigms and their ontological, epistemological and methodological beliefs.

Table 3.1 Paradigms

	Ontology	**Epistemology**	**Methodology**
Positivism	Realist – external, objective reality, independent of the individual.	Objectivist – individual is able to observe knowledge without influencing it.	Experimental – theory testing. The hypothesis is proposed and tested via empirical methods.
Constructivism	Relativist – reality is relative to the interpretation of the individual.	Subjectivist – all knowledge is socially constructed and influenced by an individual's prior experience.	Hermeneutic – theory building. Inquiry that aims for a better understanding of the phenomenon.

In response to the ontological question there are two prevailing perspectives, realism and relativism. The realist asserts that there is an objective reality that exists externally and independently of the observer. This reality is governed by a set of natural laws, which are used to form generalisations about reality (Guba 1990). The relativist agrees that there exists an external world, but argues that we perceive that world individually. When dealing with research, the relativist acknowledges that there must always be an interpretative gap between the outside world and our account of it; that when we engage with data 'we produce another layer of interpretations, another web of preconceptions and theoretical assumptions' (Parker 1999, p.84). Therefore, the constructivist researcher aims to explain how people interpret certain situations within specific social and historical contexts (Schwandt 2007).

The epistemological question is also of a dichotomous nature, with objectivism and subjectivism as the primary responses. An objectivist believes that fact is fact, reality is real, regardless of whether there is consciousness around to observe it (Rand 1982). The positivist belief system, which strives for measurability, predictability and controllability and the researcher as neutral observer is highly influenced by objectivism (Cohen *et al* 2011). In contrast, subjectivism considers knowledge to be socially constructed; that each individual constructs their understanding of the world through their experiences and engagement within it. Research, therefore, is the result of the direct interplay between the researcher and the participant(s) (Guba and Lincoln 1989). There are also clear ramifications for education, and teachers' CPD, here in that a subjectivist epistemology highlights the importance of understanding the wider context of an individuals' learning needs, in order to effectively support them in making new constructions.

Perhaps unsurprisingly, the positivist and constructivist paradigms also prescribe alternative methodologies. The experimental methodology is preferred by positivists, which in an educational context is characterised by random controlled trials, quantitative data and an emphasis on verifiable facts (Pring 2015). The hermeneutic methodologies advocated by constructivists, meanwhile, rely on qualitative data collection methods to generate constructions upon which there are substantial consensus (Guba 1990). For example, considering the focus of this study, an experimental approach would devise an intervention based upon hypotheses of effective CPD from the literature and then test it out with a group of teachers, whilst continuing usual practices for a control group. Within the hermeneutic approach, the aim is to understand how CPD supports DL, and so a qualitative approach is taken in order to develop a theory that communicates how CPD supports DL.

A constructivist approach was taken for this study as it aligns most clearly with the researcher's own understandings of the world and knowledge. Additionally, as previously stated, it is the intention of this thesis to utilise teacher voice to investigate the impact of current PD strategies on the development of DL skills and confidence. The viewpoints of the participants are key to developing an understanding of this particular phenomenon and so the constructivist paradigm is considered to be the most appropriate approach for this research.

3.2 Research Strategy

Having outlined the research paradigm chosen, the next step in the design process is to consider the appropriate strategy to apply. Research is often identified as falling into one of two categories: quantitative, collecting numerical data that will be analysed via statistical testing; or qualitative, collecting various forms of data and analysing them to identify themes and patterns. As this study will be collecting data on the experiences and opinions of school staff, it falls within the qualitative camp. More specifically, this study has applied a constructivist grounded theory approach. Grounded theory was chosen as it was deemed the most suitable approach, given the aims of the research.

Whilst a number of qualitative strategies could have been applied, others did not meet the specific criteria of this study. A phenomenological approach would have complemented the subjective epistemological underpinnings of the study. However, the focus on description and the lived experience of individuals would not have effectively captured the social nature of teachers' professional development (Starks and Brown Trinidad 2007). Similarly, an ethnographic approach would have complemented the constructivist viewpoint and captured 'the perspectives and the interactions of the members of the social groups being studied' (Pring 2015, p.126). Given its participatory nature, however, it would have been difficult to implement in a school setting due to restrictions on teachers' time and safeguarding concerns. Additionally, the ethnographic approach endeavours to test a hypothesis, which was not the aim of this study (Brown 2009).

In contrast, grounded theory allows for the exploration of data, without influence of a hypothesis, to develop a theory with explanatory power rather than merely description. The guiding principle behind grounded theory is the notion that theory is emergent, rather than

predefined (Cohen *et al* 2011). In many studies, a researcher will begin with a hypothesis, derived either from existing literature or their own practice, and they will then collect and analyse data in order to prove or disprove the hypothesis. In grounded theory, however, the intention is to build and generate theory from the data. A researcher conducting a grounded theory study would begin not with a hypothesis, but instead with a topic or situation of interest and an open-ended research design. In the case of this study, the researcher did not have a hypothesis, but rather an awareness of an area of teachers' professional development that required deeper exploration. Once the data is collected, it is then analysed, and the theory generated directly from the findings.

Whilst the grounded theory approach requires the researcher to be open to the possibilities of the data being collected, it is also important to be able to identify concepts of theoretical significance; this is referred to as a researcher's theoretical sensitivity (Glaser and Strauss 1967). A researcher is not required to enter the field with no prior knowledge of the area, but rather to be reflexive about their previous experiences and understandings so as not to allow preconceptions to skew the data collection and analysis. Having a background in the research area can actually be seen as an advantage, as it strengthens the researcher's theoretical sensitivity by providing them with valuable contextual knowledge of the area which may help to highlight points of significance in the data (Birks and Mills 2015). Glaser (1978, p.39) notes, however, that 'the sensitizing concept is not simply verified through the research process … it is used to uncover *data* that otherwise might be overlooked'. By this he means that a researcher's prior knowledge does not become the grounds of a hypothesis, but rather is used in the initial phase of the study to guide the initial data collection and begin the first instance of analysis, until theoretical sampling can begin.

3.2.1 Elements of grounded theory

Glaser and Strauss's (1967) original iteration of grounded theory was built upon three key foundations: constant comparison; theoretical sampling; and theoretical saturation (Idrees *et al* 2011).

Table 3.2 Key foundations of grounded theory

Constant comparison	Evaluating new data against that already collected
Theoretical Sampling	Existing data and developing theories guide selection of future participants
Theoretical Saturation	The point at which new data ceases to create new codes or categories

Constant comparison is a process which involves the evaluation of new data with that already collected. This is comprised of four stages:

1. unitising and categorising the data in order to compare incidents that are applicable to existing categories;
2. further coding and the integration of categories, aided by the process of memo writing to support the researcher in capturing their ideas related to possible emerging theories;

3. working towards theoretical saturation and defining the boundary of the theory;
4. the presentation of the theory

(Cohen *et al* 2011).

Within this study, constant comparison was achieved initially through the coding of each unit of data, aided by the use of Computer assisted qualitative data analysis (CAQDAS) software. NVivo, the specific software tool chosen, supports this process through the ability to access all previous codes assigned to the body of data as a whole. This process is described in greater detail, with illustration, later in the chapter (see section 3.4.2 *using NVivo*). Data collected under each code and category were then collated using NVivo, and worked through manually to analyse the suitability of each unit of data within each code or category.

Glaser and Strauss (1967, p.107) highlight the importance of memo writing throughout the constant comparative method of analysis for tapping into 'the initial freshness of the analyst's theoretical notions' as they work their way through the data. This strategy was utilised during the researcher's consideration of each category and later used to compile a data audit for review by the researcher's supervisors (see section 3.5.3 *Strategies applied*). These memos captured the analysis process and the evolution of the theory as the codes and categories were compared and contrasted.

Theoretical sampling is a method of sampling which involves the use of existing data and developing theories to influence where the researcher seeks out further participants for data collection. Only when the researcher 'discovers codes and tries to saturate them by looking for comparison groups, does both what codes and their properties and where to collect data on them emerge' (Glaser 1978, p.37). Theoretical sampling allows the researcher the flexibility to follow the data that reflects what is happening within the field. This process is repeated until theoretical saturation is reached. It should not be confused with selective sampling, which uses the researcher's knowledge of the field to directly target participants who may generate useful data. Instead the existing data guides the researcher to the next group of participants, based on characteristics for comparison and clarification of the developing theory.

It should be noted that theoretical sampling can be difficult to achieve within certain settings, working with schools being a prime example. Given that certain gatekeepers need to be approached before research can begin, there is a need to be flexible in the sampling method used. The primary sampling method used within this study was that of theoretical sampling. The researcher used prior knowledge of the schools, through previous research engagement, to request data collection opportunities with schools as the body of data grew, in accordance with the emergent themes from the analysis. This was, however, within a wider context of opportunity sampling, as the researcher had a limited time and limited possible number of participants (working within one specific local authority) and so worked with those schools able to participate at the time of the data collection.

Theoretical saturation is reached when new data fits within existing categories and theory, without generating new properties. Glaser and Strauss (1967) identify the following criteria for determining saturation: the empirical limits of the data; the density of the theory; and the

researcher's theoretical sensitivity. Theoretical sampling is an important element of reaching theoretical saturation, as it is through constant comparison of data from as wide a range of subgroups as possible that the researcher can ensure density of the emerging theory. This may cause concern for researchers embarked on a time restricted study, however, in his later work with Corbin, Strauss (Strauss and Corbin 1998, p.136) acknowledges that saturation 'is more a matter of reaching the point in the research where collecting additional data seems counterproductive'. Once again, the researcher's theoretical sensitivity is required to make a judgement on when saturation is reached.

Within this particular study, it was decided that saturation would be reached once data collected from new sources created no new categories of data. This point was reached with the final data collection session of the main phase of the PhD, with school six. This was then followed by one further interview and two observations in order to further clarify the findings and strengthen the claim that theoretical saturation had been reached.

Memo Writing, alongside these three foundations, is central to the generation of theory within the approach. In fact, Glaser (1978) deems the act of memo writing so important that he claims a study without memos cannot be classed as grounded theory. Memoing is the note taking process carried out by the researcher throughout the study in order to capture new thoughts and ideas around the emerging theory. Denscombe (2014) notes that they can be seen as a documented record of the analysis carried out by the researcher; an audit trail of the decisions made.

The memo writing process supports the researcher in four areas (Glaser 1978):

- developing their initial ideas by moving beyond description and into theoretical analysis;
- capturing ideas quickly, as memos are not constrained by the rules of academic writing, style is not important here;
- producing a clearly indexed and sortable collection of notes to aid the sampling, analysis and writing of the theory; and,
- creating a bank or fund of memos which can be re-sorted and used for later works.

Traditionally memo writing begins within a study alongside constant comparison and acts as 'the methodological link, the distillation process, through which the researcher transforms data into theory' (Lempert 2007, p.345). There is no definitive time at which to end the memo writing process. Time may be an important factor in deciding when to stop, for example within a PhD study, however, it has also been noted that memo writing during the final write up of the theory can yield valuable resources for future work (Glaser 1978).

Within this study, memos were collected through three primary methods: typed notes, handwritten notes and audio notes. Typed notes were saved both amongst the researcher's PhD files and also imported into NVivo and linked to transcripts and codes where appropriate. This is a hyperlink within the software that allows quick access to memos associated with data sources (such as transcripts) and other project items (such as codes). Handwritten notes were collated in a designated notebook and in some cases were then used to create more detailed

typed memos. For example, a number of short handwritten notes were taken whilst conducting the initial coding of the pilot study data and these were then used to create fuller memos of the initial coding process. Audio memos were used largely within the later stages of focused analysis, when hard copies of codes were reviewed against the wider content in NVivo. As the researcher was working both onscreen and on paper, audio notes presented an easy way to capture thoughts whilst working. Additionally, the Samsung Voice Recorder function allows for Voice Memos, in which the audio is automatically transcribed during recording. As can be seen, the form of memo chosen varied depending on the phase of the research and the availability of resources.

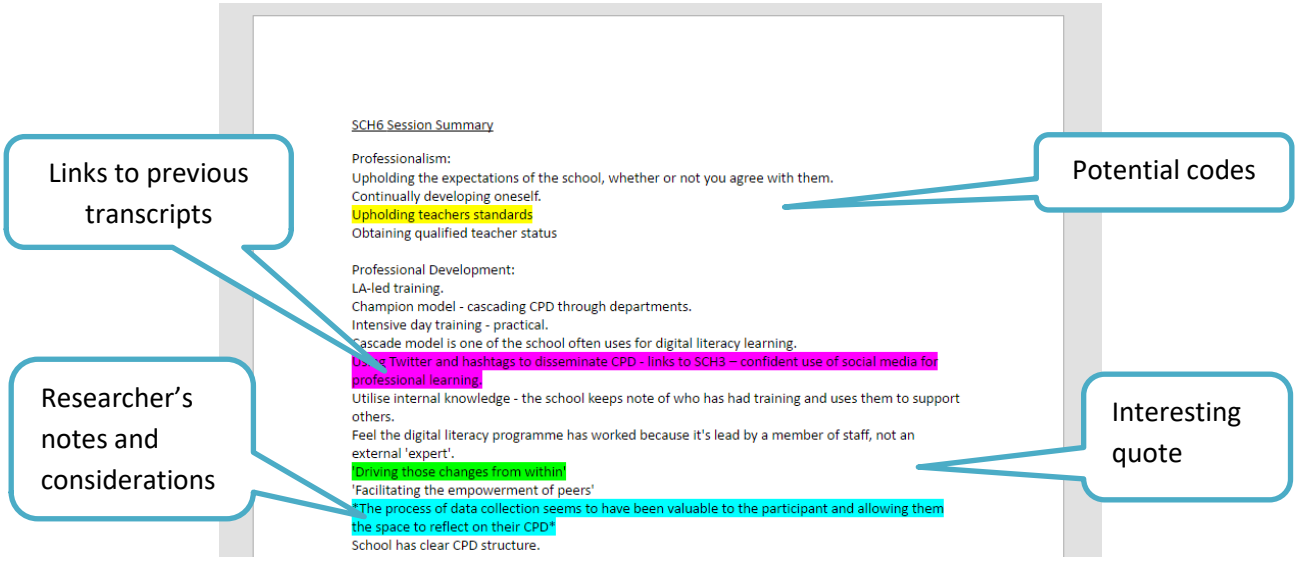
Data Collection

Following each data collection session, a short memo was handwritten to note the experience of the data collection and the engagement from the school. The experience of accessing each school differed significantly and capturing these experiences in memo form ensured that any observed nuances from the session could be considered later during analysis. For example, in some cases the member of staff responsible for delivering internal CPD was present and this clearly caused friction in the room for some participants. It was therefore important to consider this environment when coding the transcript from the session, as what was not being said could be just as important as what was.

Getting to know the data

At the initial stage of analysis, during the transcription of the interviews and focus groups, summaries of the emerging ideas and themes were hand written and later typed up and linked to the transcript in NVivo. The content of these memos was organised into two sections, professionalism and professional development, to reflect the structure of the data collection. Collated within each memo were a mix of key ideas and potential codes, interesting quotes, links to other transcripts, and notes regarding the research more widely (see Fig 3.2). These memos were useful in capturing the researcher's initial response to the discussions.

Figure 3.2 Transcript memo example



Initial coding

During the initial coding phase, handwritten notes were taken detailing the meaning of emerging codes and capturing the researcher's thoughts throughout the process about possible categories and relationships between the codes.

Memo 3.1 04/09/15

A key theme developing through the initial coding of the interview transcript focuses around staff expectations of the role that their school plays within their CPD. It is clear from the interview that [T7] feels a significant lack of support from her school in terms of her development needs. She also suggests, from the way that she phrases her statements, that other staff within the school appear to her to receive support which she is not offered.

'In fact nobody has suggested anything as yet, for me'

*'**Has there been anything in-house in the school**?*

For me, in terms of my development, no.'

Coupled with her admittance at feeling unhappy early in the academic year - that she was solely responsible for understanding her new role - it would appear that [T7] feels let down by the school so far; that they could have made her first year a better experience if they had offered her the support she needed. Given her self-driven approach to CPD and her engagement with independent learning through social media and other online resources, it is clear that [T7] does not expect to have her CPD organised for her; just that she expected the foundational support to come from the school.

It came to light through the interview that in a number of previous, non-secondary teaching, roles [T7] provided CPD support to other colleagues, in both an informal and formal capacity, often around the use of technology for teaching and learning. Having provided this support herself, she clearly has higher expectations of the school's role within her own CPD.

As can be seen from the excerpt above, the memo writing process provided the researcher with the space to consider early coding in more detail and to make links between the information shared by participants during the sessions. It is because of this quality, of prompting analytical thought at an early stage, that memo writing is seen as a crucial method in grounded theory research (Charmaz 2006, p.72).

Focused coding and reviewing themes

Notes were primarily taken via voice recorder at this stage of the analysis, due to the need for memo capture to be simple and not interfere with the reviewing of codes. These notes were more informal in nature, but at the same time were concerned with more conceptual ideas about the relationships in the data and their wider meaning and application. The analysis process was also captured using memos, which proved useful in reviewing the approach taken and considering the analysis skills developed throughout the PhD.

> Memo 3.2 04/04/17
>
> *Two varieties of CPD session appear to be of particular interest to teachers. The first is short and sweet snippets of different tools and practises, much like a TeachMeet or showcase style session. Staff like these because they are able to get a feel for what is available and they get a brief introduction to each app and are then given the information necessary to look deeper into each one individually in their own time should they wish to. The second are more intensive, in-depth sessions that focus on one particular skill, practise or tool and go into greater depth as to how that can be used, the practicality of its use and hands-on experience at using that tool or planning for that practise. Staff like this style of CPD as once they have chosen a particular tool or practise that they wish to engage with they like to have the support of an expert in that tool or practise for an extended period of time.*

At this stage, it was found useful to return to earlier memos and review where categories and theory were developing in relation to the researcher's initial thoughts. In the earliest memos the researcher had discussed some developing notions of professionalism from the pilot study data. Similar categories emerged from the main study transcripts. However, they had been handled slightly differently, referring to *values-based professionalism* within the pilot study

> Memo 3.3 04/12/15
>
> *It is important to note, however, that there is no consensus in the literature as to the definition of professionalism and given the contrast between the current predominant theories and my recent data, it could be argued that multiple instances of professionalism exist in parallel. That whilst the government does appear to be attempting to make the label of the professional a tool for enforcing teacher conformity (Pedder et al 2010), there still exists, if only at the local school level, an instance of professionalism that views its key concern as providing a public service that enables the happy and healthy development of children.*

and *duty of care* within the main study. During an early memo the researcher had discussed a theory of *parallel professionalisms* in which the difference between the literature and the data were considered. During the process of analysing the main study data, however, this theory had taken a backseat and reviewing the memos from the initial stages of the analysis proved crucial at the later stages.

> Memo 3.4 29/01/16
> *They also continue to build towards my developing idea of parallel professionalisms – that there is no one definition of what makes a professional, but rather many instances of professionalism that co-exist dependent upon the situation.*

Memos were also produced as the theory itself began to emerge, again captured using voice memos. This offered a timely way to capture ideas as they formed, allowing the researcher to document the evolution of the study from data analysis to theory development. These memos were also then used to aid the writing-up of the thesis.

3.2.2 Constructing grounded theory

Traditional grounded theory was influenced by a mix of quantitative and qualitative methodology, brought about through the collaboration of Glaser's post-positivism and Strauss's pragmatism (Birks and Mills 2015). Glaser and Strauss's seminal text on grounded theory 'legitimised qualitative research as a credible - and rigorous - methodological approach in its own right' (Charmaz 2014, p.8). Since its earlier development, grounded theory has split into three main styles, though other variants do exist (Evans 2013). It is vital that a researcher be explicit about the grounded theory style chosen, as whilst each share the core elements of grounded theory, they each approach the methodology differently.

The first deviation from traditional grounded theory occurred in Strauss and Corbin's (1990) first published work, *Basics of qualitative research: grounded theory procedures and techniques*. This book offered a recipe for grounded theory analysis which was both more procedural than the strategy described in *The Discovery of Grounded Theory* yet also looser in its development of formal theory (Bryant and Charmaz 2007). Straussian grounded theory also emphasised the importance of minimising one's own assumptions. A more procedural, systematic approach to grounded theory would be of great use to a student or early-career researcher, providing the necessary scaffolding to guide them through the process. Glaser (1992), however, viewed the adapted approach as 'totally unnecessary, laborious and … a waste of time' (p.43).

Whilst Strauss, independently and through his work with Corbin, began to evolve traditional grounded theory into a systemic approach, Glaser continued to work on the traditional, emergent style. Glaser (1978) focused on the researcher's theoretical sensitivity and ability to identify the formal theory emerging from the data. In many ways, however, his approach was also less formal than that of Strauss and Corbin. He did not agree that a systematic approach was necessary, even claiming that transcripts did not need to be written, but rather the

researcher's notes could be used to code the data (Glaser 1992). It is likely that this approach would be challenging for an early-career researcher.

Despite being the most utilised form of qualitative research strategy, grounded theory does face criticism (Bryant and Charmaz 2007). A common critique is that whilst many studies claim to have taken a grounded theory approach, there is some discrepancy between the claims and those that actually produce theory (Charmaz 2014). Often a study will only produce a description of the setting, rather than an explanation of it. This can be a particularly easy trap to fall into as an early career researcher, still getting to grips with the grounded theory method. In order to minimise the likelihood of this outcome, the approach outlined in 3.2.3, *process of grounded theory within PhD study*, was taken to ensure a true grounded theory was developed.

One of the primary critiques of traditional grounded theory was its failure to acknowledge the implicit theories that guide the early stages of research and, in that sense, that data are not neutral (Silverman 1993). In response to this, Charmaz (2000) argued that grounded theory did not need to be guided by the positivist position, but could instead be applied using a different philosophical stance. Charmaz's (2000) approach combined the Glaserian and Straussian analytical methods, resulting in a strategy that is not as tightly implemented as Strauss and Corbin's work, nor as rigidly focused on formal theory as Glaser's. Constructivist grounded theory acknowledges the role of the researcher within the study and the fact that knowing is inherently embedded within social life (Charmaz 2014), meaning that the data collected within a setting is co-constructed between the participants and the researcher. This approach to grounded theory requires high reflexivity and can be seen to reposition 'the researcher as the author of a reconstruction of experience and meaning' (Mills *et al* 2006, p.26).

Constructivist grounded theory has also faced its share of criticism, primarily focused upon this construction of theory through the relationship between researcher and participant. The critique being that in recognising the subjective nature of research, and moving away from the abstract, objectivist view of data, one is not actually conducting grounded theory but rather merely qualitative data analysis (Glaser 2012, Evans 2013). It is important to note, however, that these critiques come solely from advocates of Glaserian grounded theory and are used only to discredit the approach in favour of more traditional approaches. When conducting research from a constructivist paradigm, Charmaz's (2014) strategy is in fact a thorough and robust approach, that recognises a relativist ontology and subjectivist epistemology (Mills *et al* 2006).

Additionally, the constructivist approach to grounded theory maintains the key features of Glaser and Strauss's (1967) original strategy, along with its inductive, comparative approach to theory generation (Charmaz 2014). The primary difference between it and traditional grounded theory is that whilst Glaser and Strauss talk of emergent theories, which arise from the data solely through collection and analysis, Charmaz (2014) discusses the construction of theory, acknowledging that research is a process of production between the researcher and participants. Mills *et al* (2006, p.32) also note that Charmaz employs a more creative style of

writing when presenting her theories, in an attempt to 'communicate how participants construct their worlds'.

3.2.3 Process of grounded theory within PhD study

Within a constructivist grounded theory approach, the research design for this thesis is influenced by Idrees *et al*'s (2011) four-stage model of theory development, which structures a grounded theory approach into a simplified four-stage process, suitable for PhD study, without compromising its guiding principles and essential elements (see section 3.2.1 *elements of grounded theory*). The model, see table 3.3, provides a scaffold supporting the researcher in carrying out grounded theory research in a style that allows for high-level planning without affecting the flexible nature of this type of research. It was felt that this approach would enable the researcher to challenge their existing research experience and knowledge, whilst maintaining an achievable study.

Table 3.3 Four stage process of grounded theory (Idrees et al, 2011)

The Uncertainty Stage	Initial review of literature and pilot study, primary focus emerges
The Emergence Stage	Simultaneous data collection and analysis, categories emerge
The Ambiguity Resolution Stage	Grey areas are clarified, theory begins to emerge
The Maturity Stage	Presentation of theory, in relation to literature

In the initial stage of the research, *The Uncertainty Stage*, a literature review is conducted in order to contextualise the study. In this case, focusing on teacher professionalism and the role of PD, existing PD strategies and DL, each developed within the context of education. Idrees *et al* (2011) state that the literature review process aids the researcher in developing a broad research question, which can then be tested through initial data gathering; essentially a pilot study. As shown in figure 3.3, the uncertainty stage made up the first year of this study, culminating in a pilot study at the end of the first academic year. More details about this can be found in section 3.3.3 *pilot study*. The primary research question then emerged from testing of the intended methods around the research question, and engagement with research participants.

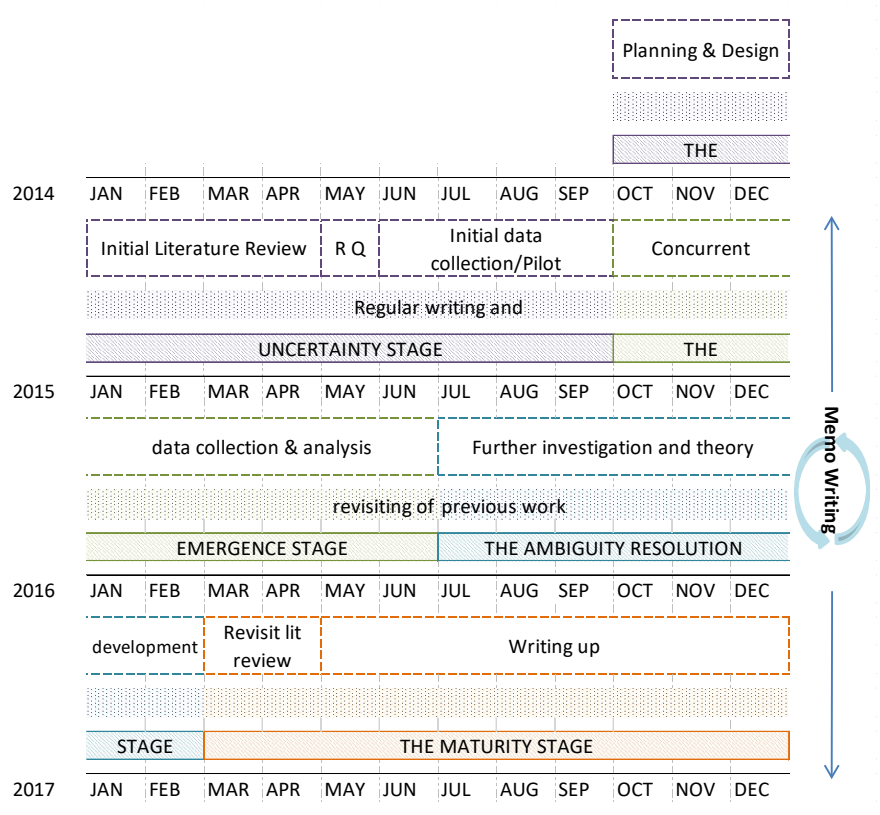
Within the next stage, *The Emergence Stage,* the researcher begins the main body of concurrent data collection and analysis, identifying appropriate future samples as the data are gathered. Through constant comparison of new data to that previously collected, categories begin to emerge. This stage can be seen as the key phase within the model; containing many of the essential elements of grounded theory. For this study, the emergence stage lasted nine months, during which time the researcher worked with seven schools to collect the main body of data. The data were collected and preliminary analysis was conducted simultaneously until the end of the school year in July, where greater analysis and comparison took place.

Having reached the point at which a core category has emerged, and initial ideas around theory are developing, the researcher enters *The Ambiguity Resolution Stage* and undertakes further data collection and analysis in order to clarify any remaining areas of uncertainty. This

continues until theoretical saturation is reached, which 'occurs when in coding and analysing both no new properties emerge and the same properties continually emerge as one goes through the full extent of the data' (Glaser 1978, p.53). Once teachers returned to work in September, the researcher began to inquire for a final round of data collection, in order to clarify the emerging themes. During this eight-month period a further interview and two observations took place.

In the final stage of the research, *The Maturity* Stage, theoretical saturation is completed, categories are refined and the literature is revisited in order to both consolidate the theory and situate it within its wider context. In keeping with the key elements of grounded theory, memo writing is undertaken at all stages of the research, underpinning the construction of the theory. Revisiting the literature towards the end of the study proved highly valuable as contextual themes that had not been explored in depth in the initial review, were later highlighted by the research findings. For example, the role of teachers' workloads emerged as an important factor and had also become a national concern, sparking an increase in literature on the topic since the beginning of the thesis. This stage of the research took a total of ten months, as it was at this point of the thesis was written and submitted.

Figure 3.3 Four-stage model in research plan



3.3 Research Methods

With the research strategy identified, the researcher must begin to choose and design their data collection tools. The purpose of data collection within this study was to gather school staff experiences of PD in relation to their DL skills and confidence. This was in the form of

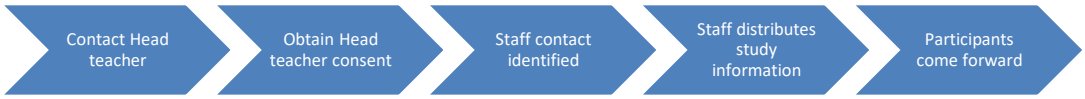
reflections on previous experiences of PD and the extent to which staff believed they have had an impact, positive or negative, upon their teaching practice. In this sense, the data collection was very open-ended, and led by the participants with only minimal prompting and clarification from the researcher. This open-ended style of data collection is necessary for a grounded theory approach, in order to produce rich data that will aid the development of theory. The main body of data collection was conducted via focus groups and interviews, with observations used to provide clarity on emerging themes later in the research, during *The Ambiguity Resolution Stage*.

3.3.1 Participants

The study focused on staff working in Leicester secondary schools, specifically those who support learners: senior leadership with a teaching role, teachers, classroom assistants and specialist provision (such as English as an Additional Language, EAL, and Special Educational Needs, SEN, support). Gaining access to schools can often require negotiation at various stages, such as identifying contacts, communicating with gatekeepers and accessing participants, which can be time consuming (Basit 2010). Previous engagement with the community resulted in the researcher having valuable information that aided this process, particularly in terms of contacting key individuals in schools. Delamont (2004) notes three golden rules of access negotiations: to record the detail of each negotiation, as they can highlight vital information about a setting; to acknowledge that failed attempts at access are data just as much as successful attempts; and, that the harder it is to gain access, the more rewarding the research will be. Memos were completed for each school contacted and visited to add to the richness of the data collected to support the study.

Recruitment began with contacting Head Teachers, as the primary gatekeeper of the school setting, to ask their permission to conduct research within the school. Having obtained their permission, the Head teacher would then identify a suitable member of staff within the school that could be contacted to discuss convenient dates and potential participants. They would then distribute a pre-written recruitment email around the school. This strategy was tested during the pilot study of the research, and later amended (see section 3.3.3 *pilot study*).

Figure 3.4 Recruitment strategy



For the pilot study, participating schools were initially selected using opportunity sampling, given the difficulty in gaining access to schools, initial recruitment attempts were made to schools who were likely to be willing to engage. Later participants were selected using theoretical sampling, which is 'the process whereby data are collected, coded and analysed in order to decide where to sample next in accordance with emerging codes and categories' (Glaser 1978). Theoretical sampling is the traditional method taken when engaging in grounded theory research. Having worked with the majority of schools in the area on previous

research, the researcher was able to use existing knowledge of the school cultures and cohorts to seek out specific schools to approach for further data collection.

The timing of recruitment was of great importance, given the academic calendar and examination timetables for secondary schools. Again, the researcher was able to rely on prior knowledge and experience from working with schools to ensure that they were contacted regarding engagement with the study at convenient times. The researcher specifically chose to avoid contacting staff within the first two weeks of any new term and during any (mock or real) examination schedules. The information necessary to determine these dates was gathered from the local authority and individual schools' websites.

The initial pilot study sample comprised of seven individuals, from two schools. A further seven schools engaged with the main phase of data collection, represented by fifty-seven individual participants. A breakdown of the demographic information collected about each participant can be found in *Appendix A*. This information includes: age, gender, role, years in service (within education) and route into role (educational/vocational). These data were collected to support the later stages of analysis where deeper exploration of the findings in relation to specific characteristics of the participants may take place where appropriate.

3.3.2 Data Collection Tools

To collect the data required for this study, three data collection tools were utilised: focus groups; interviews; and observations. Within the emergence stage of the research, focus groups and interviews were used to collect the experiences and opinions of school staff, in relation to their PD and DL. A flexible approach was taken to the data collection, with the focus group and interview tools used interchangeably to suit the needs of the school. In some schools, a group of staff were able to come together to discuss their views, in others only one member of staff or a small team were free to meet with the researcher. The flexibility of this approach allowed the researcher to include more schools in the study, who would not have been able to organise for a group of staff to participate in a focus group. Later, in the ambiguity resolution stage of the research, observations were used to capture the emerging themes from the discussions within the setting.

3.3.2.1 Focus groups

The aim of this thesis was to investigate current PD strategies and their impact on the development of secondary school staff DL. By using an open-ended approach to questioning and focusing on the topic of PD experiences, rather than having more focused questions on elements of the PD experience, participants were not restricted in their responses. This allowed for the collection of data that the researcher could not anticipate, which could shed new light on the research topic. This was also the reason behind choosing focus groups over group interviews, as the researcher did not wish to dominate the discussions by directing questions to each participant in turn, but rather to allow the group to interact with one another and build on one another's ideas and opinions (Silverman 2011).

A total of six focus groups were conducted throughout the research; one during the pilot study and the remaining five during the main data collection. The purpose of the focus groups was to

collate the experiences and opinions of in-service staff, in relation to their DL CPD. Each session took place at the school, at the end of the school day, around 3pm, for the participants' convenience. As can be seen in table 3.4, discussions lasted between twenty-five and forty-seven minutes long, averaging around thirty-six minutes. Numbers of participants varied for each focus group.

Table 3.4 - Number of participants and duration of focus groups

SCH1	6 Participants	0:38:20
SCH3	10 Participants	0:47:17
SCH4	15 Participants	0:38:10
SCH6	8 Participants	0:25:55
SCH7	19 Participants	0:31:49
SCH8	3 Participants	0:39:35

Each session began with a brief introduction of the purpose and aims of the data collection, followed by information for participants on what to expect throughout and ground rules for engagement in the discussion (see *Appendix B*). This was followed by an opportunity for participants to ask any questions pertaining to the research and the data collection experience, whilst information sheets were shared and consent forms signed (see *Appendices C and D*). A short PowerPoint presentation was requested at one school, delivered to the group before commencing the data collection, to provide staff with background information on the wider study (see *Appendix E*).

The data collection itself consisted of two portions. Each focus group began with a question regarding what it meant to the participants to be a teaching professional; what characteristics and attributes they believed make an individual a professional. This short introductory question was followed by the main topic for discussion: experiences of PD. Participants were asked to reflect on an experience of PD or training which had been focused on the use of technology in the classroom and to then discuss that experience in relation to their engagement with the session, their reactions to the session, the outcomes of the session and their thoughts on the session (see *Appendix B* for full list of guiding questions). An open-ended approach was taken, using only the initial question and guiding questions to ensure the group stayed on topic. This approach was chosen to allow the researcher to ensure the discussion was relevant to the research aims, without constricting participant responses on the topic.

The decision to add an initial question regarding teacher professionalism was influenced by earlier reading on the research topic, alongside the researcher's contemplation of the area more widely. It was felt that discussions of PD would benefit from being contextualised within the wider notion of professionalism. So just as the literature review must discuss professionalism, professional learning and DL separately before being able to expand on professional development strategies that support DL, so too must the data collection begin with a discussion of professionalism, before embarking on a dialog concerned with the development of that professionalism. Charmaz (2014) notes that a constructivist grounded theory researcher has two main concerns when interviewing:

1. To learn the participants' words and meanings; and
2. To explore the researcher's areas of emerging theoretical interest when they are raised by participants.

By beginning each data collection session with an explicit statement of what professionalism meant to the participants, the researcher was in a better position to understand their meanings when discussing how that professionalism had been enhanced and developed.

3.3.2.2 Interviews

Interviews as a research method, are often used for one of three purposes: as the main form of data collection; to test out an existing hypothesis; or, in conjunction with other methods for triangulation and richer data collection (Cohen *et al*. 2011). The interviews within this study were used in conjunction with the focus groups and observations, in order to generate emerging themes on teachers' experiences of PD surrounding the use of technology. Interviews were offered to schools as an alternative data collection method to focus groups, where larger groups of staff were not able to engage with the research. There are a range of formats used in the design of an interview, much like that of a focus group. For example, they can be structured, semi-structured or open-ended in their questioning.

Structured interviews involve the use of pre-defined questions and multiple-choice answers, to allow the researcher to tabulate responses as they are given; this style of interview is common within a positivist paradigm (Silverman 2011). Researchers taking a constructivist grounded theory approach advocate the use of intensive interviews for data collection, as 'a gently guided, one-sided conversation that explores research participants' perspective on their personal experience with the research topic' (Charmaz 2014, p.56). This technique is favoured as it supports open-ended questioning, whilst remaining directed by the researcher to ensure that the research topic is focused upon.

Three interviews were conducted over the course of the study; two during the main data collection and one as part of the initial pilot study. Interviews took place at the school, at the end of the day, each involving one member of staff.

Table 3.5 - Number of participants and duration of interviews

SCH2	1 Participant	0:40:13
SCH5	1 Participant	0:31:03
SCH9	1 Participant	0:33:16

The interview schedule included the same questions and guiding statements as the focus group discussion guide (see Appendix B), though the sessions themselves involved more input from the researcher to create a dialogue with the participant as they were the sole contributors. It is important to note, however, that the interviews were still semi-structured and the involvement of the researcher during the interviews was purely to prompt and encourage the participant, or to request elaboration, not to influence the content of the discussion.

3.3.2.3 Observations

Within this thesis, the observations were not used to collect new data, but rather to consolidate the researcher's understanding of the emergent themes from the interviews and focus groups. Bryman (1988) notes six main aims of observational research, as shown in table 3.6. In relation to this study, the observations conducted provided the researcher with in an opportunity to experience teachers' PD first-hand, facilitating the researchers' ability to understand the process from the participants' perspective. By witnessing the CPD sessions, the researcher was able to take note of finer details relating to the content and interactions that took place within their original context.

Given that during the focus group and interview sessions teachers would often discuss their experiences in a decontextualised way, the observations allowed the processes involved to be seen in their original order. It also allowed for the more implicit details of the CPD sessions to come to light. The observations encouraged a more open approach to the analysis of the data collected and prevented a focus on categories that emerged which may not fit the data sufficiently. Memos were written by the researcher after each session and then added to the dataset.

Table 3.6 Bryman's aims of observational research (1988, p.61-62)

Seeing through the eyes of	Witnessing events, actions, etc. through the participants' perspective
Description	Taking in detail to provide an understanding of what is going on
Contextualisation	Situating the data within the wider context in which it occurs
Process	Viewing the interlocking events of the research topic
Flexible research designs	Not imposing prior frames of reference to the study
Avoiding early use of theories and concepts	Helps to decrease the risk of imposing theories and concepts that are a poor fit with participants' perspectives

Observations were conducted in two schools during the study, each of different PD styles. The first was of an externally-led training session on a piece a technology and the second of an internal DL champions group. Both observations took place at schools that had previously taken part in other forms of data collection within the study. One was conducted live, with the researcher sitting in on the session, and the other was recorded for the researcher to observe at a later date. This was beneficial in two ways in that the researcher was unable to attend the original session so was still able to observe the meeting, but at a later time that suited the school, and, through recording the session, staff were more likely to behave naturally.

An observation schedule was used to record data throughout the session. This was derived from the prominent themes emerging from the data at the time. The schedule was of an open design, with the themes listed on the left-hand side and open space for the researcher's notes on the right (see *Appendix F*). At the bottom of the schedule, further space was provided for generic notes and sketches pertaining to the wider context of the session.

3.3.3 Pilot Study

In order to test out each of the chosen data collection tools, the end of the uncertainty stage was marked by the pilot study, which was conducted towards the end of the academic year in July 2015 in an effort to find a balance between convenience for the schools during a busy (and primarily exam-focused) time of year and the need to collect some preliminary data within the first year of the study. The main aim of the pilot study was to test the research design, with specific foci on recruitment procedures, data collection tools and data analysis methods. During the two-week period, a focus group and an interview took place. Unfortunately, at this time, the opportunity to observe a PD session did not arise.

The recruitment procedure outlined in section 3.3.1, *participants*, was utilised for the pilot study. As this was the first piece of data collection, purposive sampling was used to select participating schools. A mix of special educational needs (SEN) schools and mainstream schools were approached to participate, to begin the research with data representing both streams of schooling. Theoretical sampling was used later in the main phase of data collection, once the initial data had been collected and could inform future recruitment choices. The recruitment process began with an email to all head teachers, informing them of the PhD research and how their school might engage with the study. The expectation was that this would elicit a response and lead to the researcher being passed on to a contact within the school who could facilitate the organisation of a data collection session. In practice, however, this recruitment strategy was found to be unsuccessful. Whilst the Head teacher is the key gatekeeper for conducting research within the school, it was found that they are not the most appropriate initial contact. From the first round of recruitment emails, no responses were received. The same occurred later when contacting a second batch of schools and it soon became clear that another approach was necessary.

Within the city where the research took place, the majority of the schools had participated in a project with the researcher prior to the PhD study. As part of that project, primary contacts were identified within each school that were well placed to identify staff needs around ICT and professional development; these were referred to as digital champions. As research associate on the project, the researcher built strong relationships with these individuals as they were regular contacts. Having had difficulty recruiting participants using the initial strategy, the digital champions were contacted. Alongside this approach, the supervisory team were asked for support in accessing contacts with whom they have previously worked. These approaches proved more fruitful, with four schools responding; two of which were then available to participate. Head teacher consent was then obtained after initial contact was made, but before the researcher conducted the data collection.

Figure 3.5 Revised recruitment strategy

The two schools' participation within the pilot varied, though this allowed for the researcher to test both focus group and interview processes. The SEN school organised a focus group of six members of staff, who cater to children aged 4-19. The session was held at the school at 3pm, the end of the school day and took place in a designated meeting room. Through the mainstream school, a secondary school catering to learners aged 11-18, an interview was conducted with one participant. This session also took place at the school at the end of the day, though this was conducted in the participant's own classroom. As can be seen in table 3.7, all of the participants were female, which may seem unrepresentative, though it is important to note that 80.1 per cent of all school staff in England, during the year that the pilot study was conducted, were female (DfE 2016d). Nevertheless, it was noted that future data collection should strive to include male participants where possible so that views and opinions between genders could be explored. Additionally, approximately 72 per cent of participants were aged over 45 years. This does not reflect the countrywide data, where 70 per cent of female school staff are under 45 years of age (DfE 2016d). Even when we take into account the fact that the majority of the staff involved in the pilot study worked in an SEN school, this is still a higher percentage than the 45 per cent national average of female staff over 45 years of age in SEN and Specialist Provision schools. This again influenced future data collection, as it was noted to monitor the age representation with a view to approaching a wider range of age groups in later sessions where necessary.

Table 3.7 Pilot study participant demographics

Focus group	Female	Teacher	37 years in service	Aged 55-64
Focus group	Female	Teacher	30 years in service	Aged 45-54
Focus group	Female	Teacher	35 years in service	Aged 55-64
Focus group	Female	Teacher	10 years in service	Aged 25-34
Focus group	Female	Deputy Head Teacher	36 years in service	Aged 55-64
Focus group	Female	Specialist provision support staff*	30 years in service	Aged 45-54
Interview	Female	Teacher	First year in service	Aged 35-44

**job role changed to protect the identity of the participant*

Each session ran for approximately forty minutes and began with an introduction to the research, a brief explanation of the how the data would be collected, including ground rules for the focus group, and an opportunity for participant's to ask questions, whilst consent was gathered. Questioning within both the focus group and interviews was focused on two key topics; a brief discussion of the participants understanding of professionalism and a

conversation about their previous experiences of PD related to the use of technology in the classroom.

The researcher had contemplated potential issues that could arise during data collection, due to the researcher's prior relationship with some of the participants, through their engagement in previous research. It was occasionally necessary to redirect the topic of conversation away from a discussion of the BSF programme, which all schools had experienced, towards a more focused conversation regarding their DL and professional learning. This provided the researcher with an opportunity to strengthen focus group moderations skills and prepare for similar experiences, should they occur, in later data collection. As suggested by Charmaz (2014), the participants' own words were used to rephrase questions in order to redirect the topic back on course. In this way, the researcher's intervention gently guided the conversation, without abruptly ending dialog or deterring participants from contributing their thoughts and opinions. However, as noted below in memo 3.1, the BSF programme did ensure that all staff had recent experiences of DL, related to technology, which proved helpful in fuelling discussions. In this way, the pilot study helped to alleviate the researcher's concerns about the data collection methods and, in particular, how the focus group and interview schedules would influence the responses given.

Memo 3.5 04/09/2015

I had worried that trying to lead a discussion on professional development around technology use might be too specific a topic to spark a productive conversation. I had also worried that not all staff would necessarily have received CPD around technology and that my previous role with Leicester City Council's Building Schools for Future (BSF) programme may confuse staff as to the purpose of the sessions and they would focus solely on the BSF experience. What I hadn't considered was that the schools' recent engagement with BSF would mean that all staff had encountered some recent CPD relating to the use of technology, providing them all with at least one experience to draw upon for our discussion. Or, that having worked with me before, they would be so comfortable and open in the way that they spoke in front of me.

Once the data were collected and transcribed, it was time to test out the data analysis technique. Since this was the researcher's first experience of grounded theory data analysis, this was the most important element of the pilot study. Initially, a paper-based analysis approach was taken, as this was the most familiar method to the researcher. It quickly became apparent, however, that given the richness of the data, this approach may become unmanageable with a larger dataset. It was at this point that the decision to make use of CAQDAS software was made. It was felt that the software would support the researcher in managing a large dataset more efficiently and would allow for manipulation and exploration of the data without effecting the original transcripts (as opposed to a paper and pen coding system). This also proved an ample time to begin experimenting with CAQDAS software, since the researcher had no prior experience and a great deal of trial and error was necessary in getting acquainted with the program. More details about the use of CAQDAS software to support the data analysis process can be found in section 3.4.2, *using NVivo*.

Overall, the pilot study provided a valuable opportunity for the researcher to prepare for the main body of concurrent data collection and analysis, becoming familiar with the necessary techniques and processes, using a smaller, more easily managed dataset. It helped to reinforce the data collection approaches chosen, both in confirming the appropriateness of the questions and prompts used and in strengthening the researcher's skills in focus group management. It also facilitated the refinement of the recruitment and analysis techniques, increasing the likelihood that the main phase of data collection could go ahead smoothly.

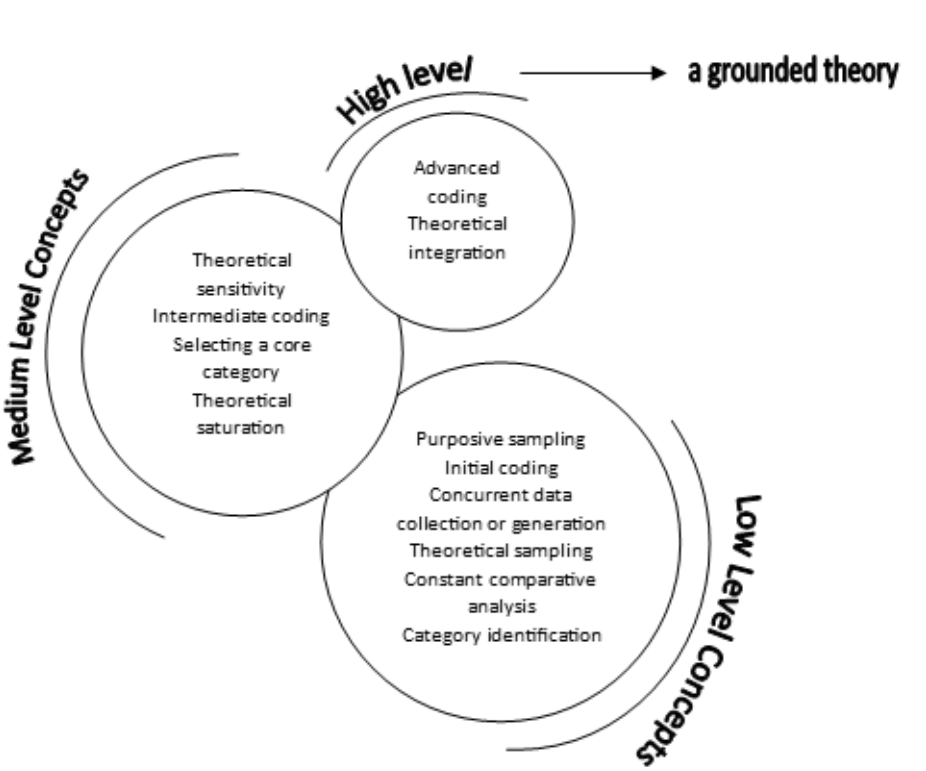
3.4 Data Analysis

Once data collection tools have been chosen, the researcher can begin to consider the analysis technique that can be applied to their data. The focus groups, interviews and observations within this study all created qualitative data in the form of transcripts and field notes. These would need to be analysed using a coding technique in order to develop the grounded theory. Here we will consider the grounded theory coding approach taken, followed by an explanation of the use of CAQDAS within this study, specifically NVivo.

3.4.1 Grounded theory analysis

Within grounded theory, the analytical methods applied to data can vary dependent upon the approach being followed. There are, however, a number of principal concepts that appear throughout. These are: codes, categories, properties, the core category, and theoretical abstraction. Codes are the labels assigned to units of data by the researcher, to summarise or interpret their wider meaning. They can also be seen as 'a form of shorthand that researchers repeatedly use to identify conceptual reoccurrences and similarities in the patterns in the data' (Birks and Mills 2015, p.89). In this way, codes are highly influenced by the researcher themselves and it is important, particularly in the early stages of coding, that the researcher remain reflexive about their choices to ensure that they do not affect the analysis through unintended bias. Categories are groups of codes based on shared characteristics. Properties are the characteristics of a category, the context within which they function and the detail behind the label. The core category is the most salient code within the data, the one that has the potential to explain the area being studied. And finally, theoretical abstraction is the storyline that ties the codes together, the underlying relationships in the data. Also common across the range of grounded theory methods, is how the coding process has a natural progression across three stages, moving from low-level to high-level conceptual analysis.

Figure 3.6 Conceptual ordering of essential grounded theory methods (Birks and Mills 2015, p.88)



The analysis process begins with the initial, open coding of the text, where the researcher gets familiar with the data. This is collected and analysed simultaneously, with the low-level analysis of the data informing future data collection choices, known as theoretical sampling. Within each transcript, and as new data is collected into the study, codes given to the data are examined against those used previously to ensure the best fit to the data (constant comparison). Once categories begin to emerge, the second phase of analysis begins. It is during this stage that the researcher's theoretical sensitivity, their ability to recognise the links in the data, is crucial in enabling the grounded theory to develop. Intermediate or focused coding takes place here, as codes are reviewed and categories are formed, merged and described. This leads to the selection of a core category and eventually theoretical saturation. In the final level of analysis theoretical coding supports the understanding of how the codes and categories relate to one another, and begin to integrate into a theory. Birks and Mills (2015) have mapped this progression in figure 3.6, using a wheeled diagram, to show how the different elements of grounded theory analysis fit within the three levels of conceptual analysis.

Table 3.8 Grounded theory coding methods

Glaser (1978)	Open coding	Selective coding	Theoretical coding
Strauss and Corbin (1998)	Open coding	Axial coding	Selective coding
Charmaz (2014)	Initial coding	Focused coding	Theoretical coding

The three main perspectives on grounded theory analysis methods are shown above in Table 3.8. For the purposes of this study, Charmaz's coding methods were utilised as they were designed for use within a constructivist grounded theory study. Initial coding is the name given to the first stage of analysis, where the researcher familiarises themselves with the data and carries out the first round of open coding. Gerunds and in vivo codes are used at this stage to identify processes and focus on the experience of the participant, rather than the researcher's interpretation (Charmaz 2014). Focused coding begins to review the codes from the initial stage and group them into categories, assess their fit to the data and the relationships between the different emerging categories. Finally, theoretical coding aids the researcher in reaching the point at which a high level, abstract explanation has emerged.

As this style of coding was new to the researcher, the analysis was also influenced by Alan Bryman's (2012) four stage approach to qualitative analysis, where the researcher had more experience. All of the elements of Charmaz's (2014) coding methods were retained, but they were organised into Bryman's (2012) four stage framework in order to create a process which best fit a grounded theory approach, whilst providing scaffold for the researcher when embarking upon a new method of coding and analysing data. Audio recordings taken from the focus groups and interview were transcribed and checked back against the recordings to ensure accuracy. The analysis then took place in four key stages.

1. Get to know the data

The transcript was read and summarised, with initial ideas noted in a memo. The summary included the key discussions within the transcript, as well as any topics that stood out to the researcher. In later transcripts, topics of similarity to previous focus groups and interviews were noted.

2. Initial coding

The transcript was read again and the text was broken up into units, compared and systematically coded. In most cases the text was coded by the sentence. In keeping with Charmaz's notion of initial coding, analysis is open-ended during this stage. In vivo coding, words directly from the participant's own language, and process coding, gerunds used to signify observable actions, were used widely at this stage (Saldaña 2009). As each new unit of data were coded, it was reviewed in comparison to the previous codes chosen to ensure that it was the most appropriate option.

3. Focused coding

Once initial coding was complete, the codes were reviewed and categories were created by grouping codes based on thematic or conceptual similarity (Saldaña 2009). Prominent categories were identified by the most common codes present within the data. At this stage, codes and categories were also reviewed in order to create links between them and to ensure best fit for the data. At this stage, a number of categories were condensed and sub-categories identified. Categories in grounded theory analysis are often multidimensional (Birks and Mills

2015). The relationships between the codes and categories were also examined at this stage as the key of this phase of analysis was the discovery of these relationships.

4. Reviewing themes

Finally, the themes were checked back against the dataset and a core code was identified. The generation of a core code is the main purpose of coding and analysis as it provides 'some new understanding of the data and constitute[s] the foundations for any theory or general conclusions to emerge from the research' (Denscombe 2014, p.288). Having identified the core category, it was then further reviewed, in relation to both the remaining codes and categories in the data and the original research question and aims. The resulting grounded theory was then evaluated in line with the criteria discussed below, in section 3.5.2 *grounded theory evaluation*, to ensure the best fit to the data and the research setting.

The observation phase of the research served a different purpose to the focus groups and interviews. Rather than aiming to collect new data, observations were concerned with clarifying the emerging themes and codes and providing an opportunity for the researcher to experience the research setting. In this way, the experiences discussed in the earlier data collection sessions could be witnessed by the researcher. Therefore, an observation schedule was created using the most prominent categories, and their constituent codes, to guide the researcher in taking field notes which were added to the data set to support the analysis process.

Combining Charmaz's analysis methods with Bryman's four stage process ensures that constant comparison takes place across all coding stages until theoretical saturation is reached, which 'occurs when in coding and analysing both no new properties emerge and the same properties continually emerge as one goes through the full extent of the data' (Glaser 1978, p.53). As stated previously, memoing was utilised during each phase of the study. First, it was used to capture thoughts on the initial summary and coding of the transcripts. Second, it was used to make notes about the categories and their properties, the codes that sat within them, and the relationship between them. Third, the researcher used memos to consider the role of the core category and the subsequent grounded theory generated from the data. Given the range of data compared, this is often seen as consistent with the methodological notion of triangulation (Cohen et al 2011).

3.4.2 Using NVivo

To support the analysis process, CAQDAS software was used. Whilst a number of packages are available, NVivo was chosen as the most appropriate given the wealth of literature and online resources available to help new users get accustomed with the software. The decision to use CAQDAS software, rather than conduct coding with hard copies, was taken due to the volume and richness of the data collected. It was felt that NVivo would help the researcher to organise the large body of data in a more efficient manner, making it easier to manipulate codes and categories, add notations and memos and still retain the original source data. The software facilitates the analysis process, but the analysis itself is still led by the researcher and guided by the principles of constructivist grounded theory. An additional benefit of using NVivo was that

it can also act as an audit trail, improving the transparency of the data analysis process (Bringer *et al.* 2006).

Bazeley and Jackson (2013) note that there are four main concerns raised by the use of CAQDAS software: that computers distance the researcher from their data; that they encourage an overreliance on coding analysis over other techniques; that the software mechanises the process, making it more quantitative in nature; and finally, that CAQDAS can only support grounded theory methodology and that it is a distinct form of approach in itself. Within the context of this study, two of these concerns are immaterial from the outset as the decisions to take a grounded theory approach and to use Charmaz's (2014) coding technique were made long before the choice to use NVivo to support the analysis. As for the remaining issues, CAQDAS software was created to provide qualitative researchers with both closeness and distance from their data, to allow manipulation of data at the holistic level, such as the mapping of codes and categories, as well as the finer detailed elements of analysis such as providing a space for descriptions of individual codes or even attributes of codes.

There is also only a finite amount of analysis that can be conducted using automated processes within NVivo, for example, using different fonts to allow the program to differentiate between interview questions and responses. The richer analysis, the work that actually generates theory, must be completed by the researcher. It seems that these concerns are primarily related to the researcher's ability to sufficiently mediate the handling of data through the software. The issue is not with the software itself, but with the researcher's ability to use it wisely. The researcher did encounter some difficulties in the use of NVivo, though these were solely in relation to the user interface. Fortunately, at the beginning of the focused coding stage a new version of NVivo was released, NVivo 11, and this proved to be far more intuitive and user friendly. Additional support was garnered from the literature, pertaining to the use of NVivo specifically to aid grounded theory research (Leech and Onwuegbuzie 2011, Hutchison *et al.* 2010, Bringer *et al*. 2006), along with a variety of online tutorials and multimedia resources (QSR International 2012, QSR International 2017).

The literature demonstrated, often with examples, how the features in NVivo could be utilised to support a grounded theory approach. This included the creation and hyperlinking of memos within the programme (Hutchison *et al*. 2010, Bringer *et al*. 2006), the use of coding stripes to review the frequency of coding (Leech and Onwuegbuzie 2011, Hutchison *et al*. 2010, Bringer *et al*. 2006) and the use of the node browser function to review all units of data coded with a particular node (Hutchison *et al*. 2010, Bringer *et al*. 2006). More practically, online tutorials offered step-by-step guidance and quick tips for using NVivo, such as how to prepare a document before importing to enable autocoding of certain elements. For example, to clearly identify the researcher's contributions as distinct from that of the participants. In order to ensure clarity around the analysis technique, it may be helpful to identify some terminology used within the program:

Table 3.9 - NVivo Terminology

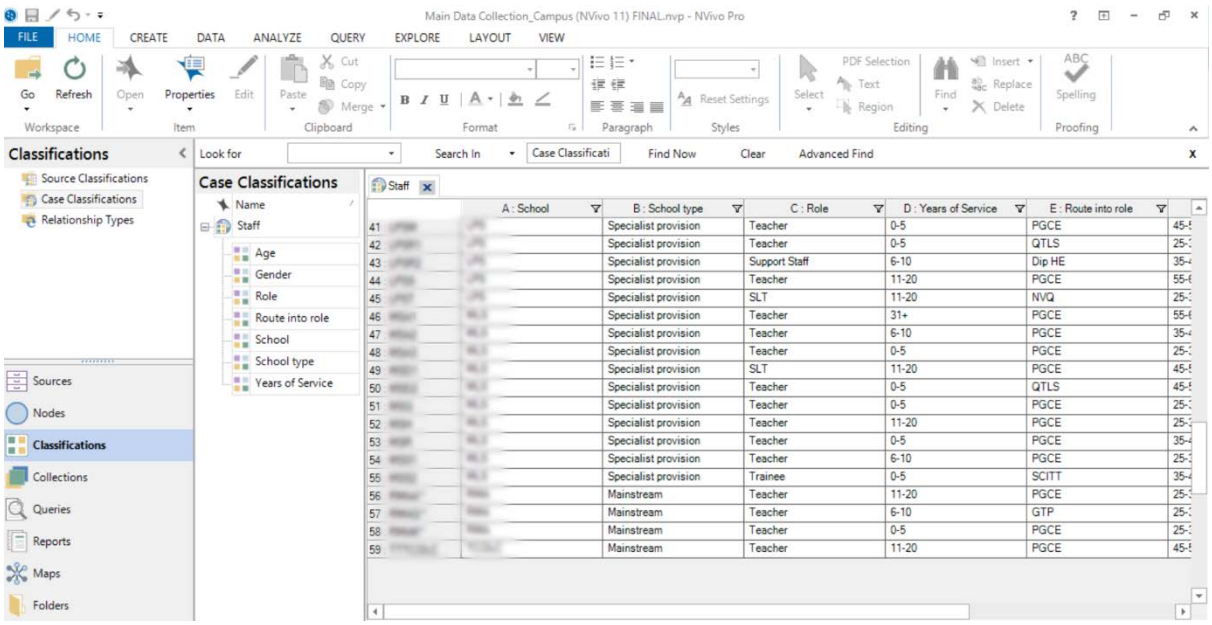
Project	The study – the source material (transcripts, surveys, etc.) and your analysis of them.
Sources	The data – transcripts, audio files, video files, pdf resources, memos. These can be internal (imported into NVivo) or external (links to sources, such as webpages, that cannot be imported).
Cases	The research subject – in this context, the research participants.
Nodes	The codes - labels for your data. These can exist as single nodes or a tree node; the category or parent of a group of codes.
Relationships	Links between nodes.
Memos	Notes that can be attached to sources or nodes. Used just like memos written outside of the program.
Classifications	Used to store descriptive information about nodes or sources. These can also be used to sort and filter data.
Attributes	Each classification has its own set of attribute values. For example, the classification *Teacher* may have attributes for *School*, *Subject*, *Role*, etc.
Collections	Groupings of project items that are stored elsewhere within the project, such as memo links (showing which memos are attached to each source).

Many of the features of NVivo support a grounded theory methodology. For example, memos can be written within the program and attached to specific transcripts, codes or categories, without affecting the original data. NVivo also supports constant comparison through its ability to reuse exiting nodes, and to create relationships and tree nodes in order to explore codes and categories (Leech and Onwuegbuzie 2011). In an attempt to be transparent about the approach taken during this particular study, the use of NVivo is discussed below, using the analysis framework presented above to illustrate how the program was used at each stage of the analysis.

1. Get to know the data

Having transcribed the focus groups and interviews outside of NVivo, the documents were imported into the program and given an alphanumeric code to anonymise the school or individual involved. Prior to importing the transcript files, the questions and participant codes were formatted using different paragraph styles. The auto coding function was then used in NVivo to automatically highlight the passages within each transcript that were the researcher and create a case to represent each participant. The transcripts were then read and summarised, with initial ideas noted in a memo, which was linked to the transcript. Additionally, as each individual participant was represented as a case in the program, their attributes were added by assigning each individual case with the classification *Teacher*. This classification holds six attributes: *School*, *Role*, *Years of Service*, *Route into role*, *Age* and *Gender*. These demographic details were collected during each focus group or interview during the consent gathering process.

Figure 3.7 Teacher classification and attributes



2. Initial coding

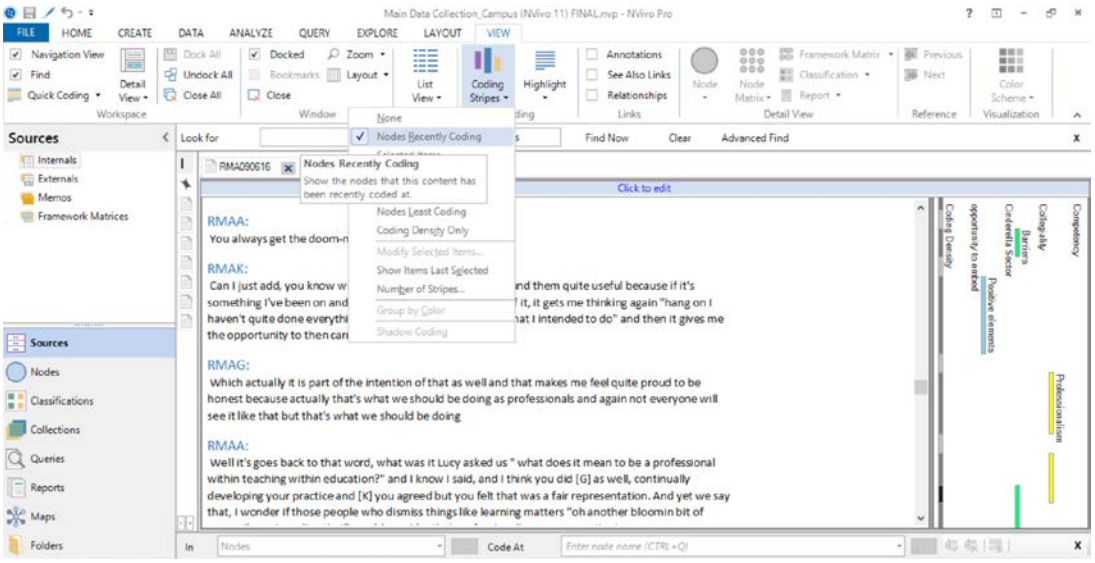
The transcripts were then read through a second time, breaking the text up into units. Each unit was assigned a code, using the node feature, summarising the content. In most cases the text was broken up into sentences, though occasionally more than one sentence could be summarised using one node. As noted above, two main styles of coding were utilised at this stage: in vivo and process coding. To code transcripts in NVivo, the user highlights the unit of text to be coded and then selects from one of three options:

- *Code selection at existing nodes* – this option allows the user to search existing nodes for a suitable label.
- *Code selection at new nodes* – this option creates a new node.
- *Code in vivo* – this option creates a new node using the highlighted text as the label.

The use of existing nodes allows for constant comparison across the data as the researcher compares each unit against those previously coded to decide if it requires a new or existing label.

To help with this process, coding stripes were viewed down the right-hand edge of the transcript, to observe recently selected nodes. These bands of colour denote the label given to each unit of text. This option can be chosen by opening the *View* tab, selecting *Coding Stripes* and choosing between a number of representation options, from most recently coded to most frequently coded nodes. In figure 3.8 below, the option *Nodes Recently Coding* was selected to allow the researcher to review recently coded units. Given that discussions often involve participants building upon one another's comments, it is useful to be able to view recent nodes, as opposed to searching the list of overall nodes offered when choosing an existing node.

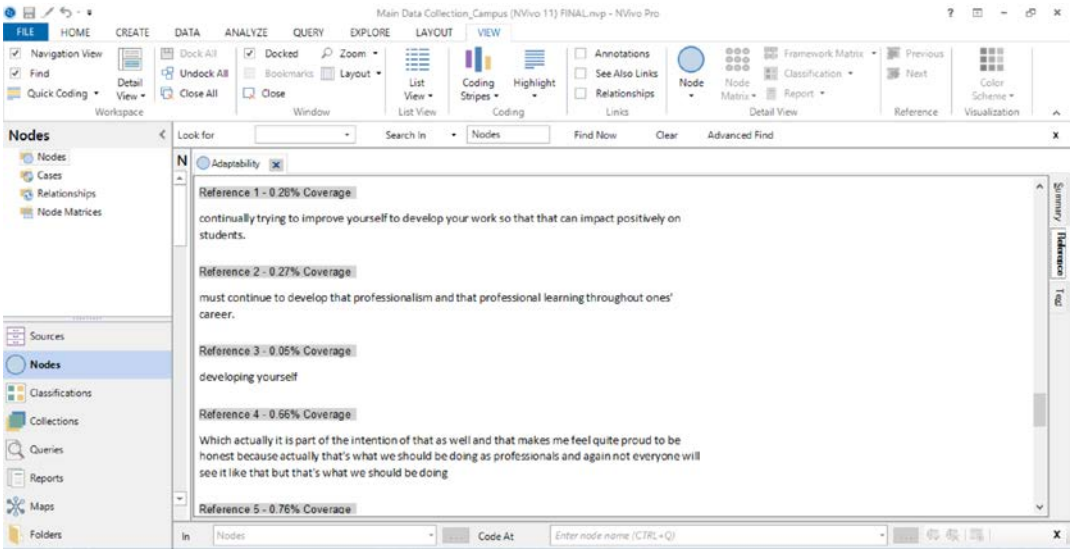
Figure 3.8 NVivo Coding Stripes



3. Focused coding

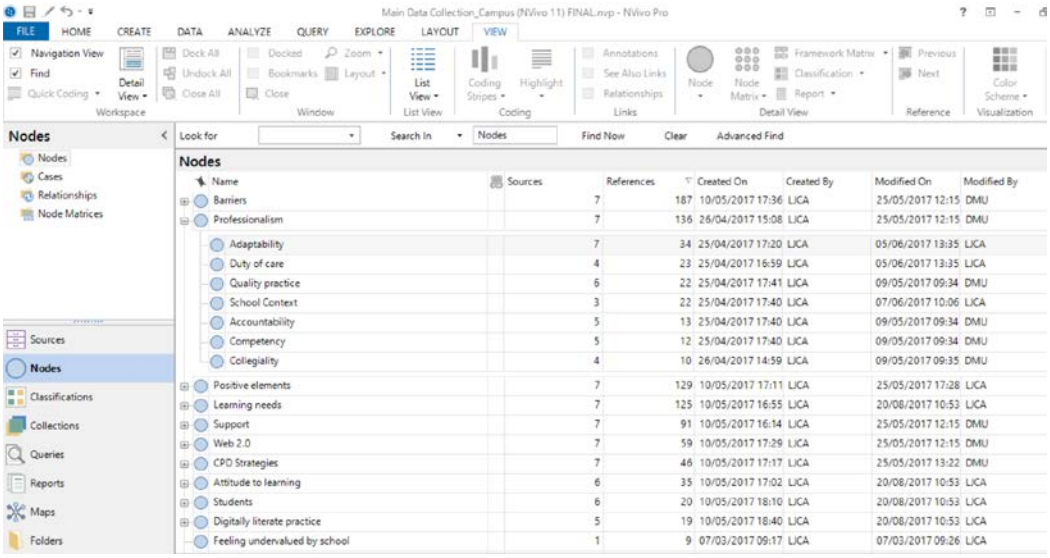
The codes were then reviewed, comparing and contrasting each node against the next and looking for similar nodes to see where categories may form, or nodes may be condensed into one. This was completed both on paper and digitally, due to the richness of the data collected and the subsequently vast collection of codes generated. It was found that being able to print out and view a list of all codes side-by-side, whilst using NVivo to explore where in the transcripts each code had been assigned, allowed the researcher to consider the data both holistically and in finer detail. To support this process, each node can be viewed separately within NVivo, and its details and assignments within the project sources can be viewed as a list, as in figure 3.9 below.

Figure 3.9 NVivo Node list



Using this view, the researcher can compare the coded units of text to review the use of the code and ensure its suitability and fit to the data. The nodes list is also useful in identifying the most common codes present within the data. The nodes list can be manipulated to present nodes in order of frequency, meaning that the most frequent codes can be brought to the top of the list. Also, where it is decided that a group of codes should be organised into a category, parent or tree nodes can be created. An example of this can be seen in figure 3.10, where the indented list of nodes have been added to a parent node to form a category and it's component codes. As with the previous stages of analysis, memos that are written during the review of codes and categories can be added into NVivo and linked to nodes or parent nodes where appropriate to highlight the thinking behind the analysis.

Figure 3.10 NVivo Parent Node and Child Nodes



At this stage the attributes, or demographic characteristics, of the participants were to be used to filter the nodes and explore any potential relationships between participant characteristics

(such as years in service, or job role) and the codes that were generated from their contributions to the data collected. As noted previously, the characteristics of each participant were logged in NVivo in the form of classification attributes. In practice, however, the process of viewing data filtered by classification attribute was more complex than expected. As the researcher did not have access to training for the use of NVivo, and online tutorials could only help so much, this element of the analysis was postponed. It is hoped that this can be explored further in future research.

4. **Reviewing themes**

The categories generated throughout the focused coding process, helped the researcher to identify the emerging theory from the data. In the list view of nodes, shown in figure 3.10, child nodes can be hidden in a collapsed view allowing the researcher to view categories and standalone nodes, and their frequency within the data. This view supports the next stage of analysis, reviewing the developing themes. Being able to consider the data from this high-level perspective allows for greater contemplation on the relationships between the categories. By reopening each category and reviewing its constituent nodes, the researcher was able to consider the correct placement for each code, following its extensive review in the focused coding stage. This led to a number of codes moving categories, categories being subsumed as subcategories into other codes and categories being merged into other categories as a code.

Once the codes and categories were finalised, the core category could be identified. This is the concept that accounts 'for most of the variation in processing the concern or issue that has emerged as the focus of the study and by conceptually explaining the latent pattern of social behaviour that accounts for its continual resolution' (Holton 2007, p.279).

3.5 Trustworthiness

With the majority of the research design selected, the researcher is able to consider what is often referred to as the validity and reliability of the research. Traditionally, validity refers to the accuracy of the measurement of a concept within a study. Within the social sciences, however, validity refers to the extent to which a study's findings are accurate and proven with evidence (Schwandt 2007). Charmaz (2014) notes that grounded theorists do not tend to conform to the traditional view of validity, instead preferring to work towards the trustworthiness of research. Here the researcher agrees with Charmaz, aiming to establish the trustworthiness of the theory that has developed from the data collected. As noted in 1.3, *rationale*, the researcher's personal goal was to create a faithful representation of the experiences and opinions of the participants, and this is most effectively supported by strategies which prove the trustworthiness of the research.

3.5.1 Validity and Reliability in qualitative research

When attempting to establish the trustworthiness of a study, the researcher is addressing four questions:

1. The 'truth value': the extent to which confidence can be placed in the truth of the findings;

2. Applicability: how well the findings apply to other contexts;
3. Consistency: how it can be determined that the findings would be repeated, if the study were replicated;
4. Neutrality: how it can be established that the researcher has not swayed the findings with their own biases.

(Lincoln and Guba 1985)

In the traditional paradigm, the response to these questions is compiled of internal validity, external validity, reliability and objectivity. Within the social sciences, however, these strategies are not appropriate. Constructivists within the social sciences have called the entire notion of validity into question, arguing that

> if truth means our ideas about the world must correspond to the way the world really is, and if validity is a test of this correspondence, then there can be no validity because there is no unmediated, observer-independent account of experience to which an account can mirror or correspond.
>
> (Schwandt 2007, p.309)

Therefore, instead of using these traditional strategies, the social sciences respond with their own criteria: credibility, transferability, dependability and confirmability (Lincoln and Guba 1985).

Credibility is the extent to which the findings represent the constructions shared by participants; the researcher's personal aim in this study. Creswell and Miller (2000, p.125) recognise that 'qualitative researchers use a lens not based on scores, instruments, or research designs but a lens established using the views of people who conduct, participate in, or read and review a study'. They created a two-dimensional framework which supports researchers in selecting validity procedures based upon the philosophical position of the inquiry and the lens through which the study is to be assessed. Within the constructivist paradigm, they identify the following procedures:

Table 3.10 Validity procedures by qualitative lens (Creswell and Miller 2000, p.126)

Researcher	Disconfirming evidence
Participant	Prolonged engagement in the field
External Reviewer	Thick, rich description

During constant comparison, the grounded theory researcher used theoretical sampling to support them in analysing a diverse range of data to ensure that saturation is based on 'the widest possible range of data on the category' (Glaser and Strauss 1967, p.61). In this way, the researcher looked for subgroups within the population from whom data could be collected that may shed light on new characteristics of a category, or a new category entirely. By aiming for theoretical saturation, the researcher can also be seen to spend as much time as necessary in the field, in order to fully develop their categories and theory. The rich description of the field and the research strategy were aided by memo writing, helping the researcher to capture important details within the field ready to write up as the grounded theory.

Member checking and peer debriefing are also effective ways of ensuring the credibility of a study (Lincoln and Guba 1985). Given the importance of researcher and participant voice within the constructivist paradigm, and teacher voice in this study specifically, strategies that ensure that the theory developed is accurately representative of the opinions collected from the field are crucial to demonstrating credibility. Member checking, or participant validation, is the process of reviewing codes, categories and emerging theories with the participants from whom the data were collected, to evaluate their representativeness. Peer debriefing involves approaching the research community with the research process and emergent findings, to receive feedback and refine the presentation of the study.

Transferability involves demonstrating how the findings can be relevant within other contexts. Unlike the research conducted within the traditional paradigm, however, it is not the social scientist's 'task to provide an *index* of transferability; it *is* his or her responsibility to provide the *data base* that makes transferability judgements possible' (Lincoln and Guba 1985, p.316). Thick description is a useful tool here as well, as it is through the clear presentation of the research design, context and interpretation that other researchers in the education community will be able to judge the suitability of this thesis within their own setting. Whilst this study has been conducted with schools in one particular city, it is felt that findings and recommendations generated could be of use to schools and staff across the UK. By employing strategies that demonstrate the transferability of the research, as discussed in 3.6.3 *strategies used*, this message can be more assertively conveyed.

Dependability relates to the stability of the data and is often viewed as the social science counterpart to reliability (Lincoln and Guba 1985). Silverman (2011) identifies two key ways in which reliability, or dependability, can be ensured. Methodological transparency ensures that the account of the data collection and analysis process is adequately rich in detail, whilst theoretical transparency makes sure that the philosophical standpoint of the researcher is made clear at the beginning of the study. Through the memo writing process, this grounded theory study can be seen to have a high degree of both methodological and theoretical transparency, as the researcher's processes and ideas were captured during the study.

Confirmability is the degree to which results can be confirmed by others. Triangulation and reflexive journaling, memoing, can be used to demonstrate confirmability. An audit trail, the examination of both the process and the product of the research study can be used to determine the dependability and confirmability of a study, respectively. Six categories of material can be utilised within an audit trail (Halpern 1983). Using these materials, a researcher and chosen auditor can review the study to determine its trustworthiness.

Table 3.11 Halpern's (1983) six audit trail categories

Raw data	Transcripts, audio files, field notes.
Data reduction and analysis products	Summaries, theoretical notes..
Data reconstruction	Category structures, findings and conclusions, writing up of theory.

and synthesis products	
Process notes	Methodological notes, trustworthiness notes, audit trail notes.
Materials relating to intentions and dispositions	Memos.
Instrument development information	Pilot study, initial schedules.

One advantage of conducting grounded theory study at PhD level, is having access to peers with expertise in one's research area who can act as judges of confirmability. The researcher was able to work with her supervisors to conduct an audit of the study, as well as gaining more informal support in this area through regular discussion of the research and developing theory. The audit trail is discussed in more detail below in section, 3.5.3.6 *audit trail*.

3.5.2 Grounded theory evaluation

Whilst viewed as a process for judging the quality of a study, grounded theory evaluation also concerns itself with the trustworthiness of research (Corbin and Strauss 2008), and it too prefers to distance itself from the notion of validity. Grounded theorists have often spoken of their discomfort with the term (Corbin and Strauss 2015, Charmaz 2014). A more common expression in grounded theory research is credibility:

> the term credibility indicates that findings are trustworthy and believable in that they reflect participants', researchers', and readers' experiences with phenomena, but at the same time, the explanation the theory provides is only one of many possible "plausible" interpretations from data.
>
> (Corbin and Strauss 2015, p.346)

As with many of the elements of grounded theory, the approach to evaluation varies from one proponent to another, though they all focus on the extent to which the data and findings can be considered credible, transferable, dependable and confirmable. In their seminal work together, Glaser and Strauss (1967) noted two main issues with conveying the credibility of one's research: getting the reader to understand the theoretical framework and presenting the data vividly to the reader in order to engross them in the work. At this stage in their work they suggested that the judgement should be based on the elements of research strategies used for data collection, analysis and presentation, though developed separate criteria later in their careers (Glaser and Strauss 1967). These different approaches will be discussed in more detail below.

Table 3.12 - Approaches to Grounded Theory evaluation

Glaser (1978)	Fit, Work, Relevance, and Modifiability.
Corbin and Strauss (2008)	Fit, Applicability, Concepts, Contextualisation of concepts, Logic, Depth, Variation, Creativity, Sensitivity, and Evidence of Memos.
Charmaz (2014)	Credibility, Originality, Resonance, and Usefulness.

In his later work, Glaser (1978) notes that a successful grounded theory study: must fit; must work; must be relevant; and must be modifiable. When referring to the **fit** of the theory, he discusses how closely the theory and categories generated fit to the data. Glaser (1978, p.4) notes that 'data should not be forced or selected to fit pre-conceived or pre-existent categories or discarded in favor of keeping an extant theory intact'. A grounded theory is deemed to **work** if it is able to adequately explain what is happening within the field, this is achieved through systematic research. Within this approach, when the issue of **relevance** is discussed, this is in relation to the relevance of the data and theory to a real-life issue within the field, as opposed to the relevance of undertaking a study within the chosen field. Finally, **modifiability** was added to the list of criteria following the publication of *Discovery*. Glaser (1978, p.5) notes that through undertaking a number of studies he learnt 'that generation is an ever modifying process', and in order for theory to keep up with the pace of change, it must be modifiable in order to ensure that it is relevant and that it works. These criteria will be used to ensure that the theory generated from this study is trustworthy.

In his later work with Juliet Corbin, Strauss (Corbin and Strauss 2008) developed a more thorough collection of criteria for judging the quality of grounded theory research. It is noted that this list has much in common with other qualitative research literature, and that these criteria alone cannot guarantee quality, but rather that reflection on these elements can help to improve it. As with many of the criteria for grounded theory research, Corbin and Strauss (2008) begin with **fit**, how well the findings relate to the data and hold true for the participants involved. Next is the **applicability** of the theory, whether or not it can be used to bring about change or increase the knowledge base. It is expected that the findings of a grounded theory study be organised around **concepts**, that the findings have substance and are more than just a description of the data. It is also critical that the concepts are **contextualised**, as without an understanding of the wider context of the study, a reader cannot truly understand the meaning of the data and findings.

When evaluating research, it is important to consider the **logic** of the work, if the methods are appropriate to the data, subsequent analysis and developed theory. Whilst one aims for more than description alone, providing detail of the research context in sufficient **depth** will allow the reader to gain a better understanding of the study. Acknowledgement of **variation**, of cases that do not fit the pattern, shows that the researcher is demonstrating the reality of life. A quality grounded theory presents a new idea, or an existing idea in a new light, showcasing the researcher's **creativity** in presenting the theory. The researcher should also demonstrate their **sensitivity**, to both the participants and the data collected, allowing the data to lead the

analysis. Finally, no study can be identified a grounded theory research without **evidence of memos**. As a crucial element of the research strategy, and a vital part of the analysis process, any study that fails to include memoing cannot be viewed as credible grounded theory research.

Charmaz (2014) provides a collection of questions for the researcher to consider when evaluating their work, grouped into four categories. The criteria begin with the notion of **credibility**, the extent to which the data and subsequent analysis support the grounded theory. The theory should also contain **originality**, in the form of new insights on the phenomena or challenges to existing practices and concepts. In order to be considered successful, the theory should have **resonance** with the participants from whom the data was collected. Finally, the **usefulness** of the theory, the potential it holds for future research, contribution to knowledge and changes to practice will impact upon its perceived value. Corbin (in Corbin and Strauss 2015) claims that Charmaz's (2014) criteria are the most comprehensive of the approaches taken to grounded theory evaluation. She does note, however, that this approach relies upon the researcher's ability to self-evaluate and that this can be a difficult process, particularly for first-time grounded theorists. Due to the research design being most heavily influenced by Charmaz's (2014) constructivist approach to grounded theory methodology, these criteria were used to evaluate the quality of the study. This is discussed in more detail in section 7.2, *research evaluation*.

Credibility

- Has your research achieved intimate familiarity with the setting or topic?
- Are the data sufficient to merit your claims? Consider the range, number, and depth of observations contained in the data.
- Have you made systematic comparisons between observations and between categories?
- Do the categories cover a wide range of empirical observations?
- Are there strong logical links between the gathered data and your argument and analysis?
- Has your research provided enough evidence for your claims to allow the reader to form an independent assessment - and agree with your claims?

Originality

- Are your categories fresh? Do they offer new insights?
- Does your analysis provide a new conceptual rendering of the data?
- What is the social and theoretical significance of this work?
- How does your grounded theory challenge, extend, or refine current ideas, concepts, and practices?

Resonance

- Do the categories portray the fullness of the studied experience?
- Have you revealed both liminal and unstable taken-for-granted meanings?
- Have you drawn links between larger collectivities or institutions and individual lives, when the data so indicate?
- Does your grounded theory make sense to your participants or people who share their circumstances? Does your analysis offer them deeper insight into their lives and worlds?

Usefulness

- Does your analysis offer interpretations that people can use in their everyday worlds?
- Do your analytic categories suggest any generic processes?
- If so, have you examined these generic processes for tacit implications?
- Can be analysis spark further research in other substantive areas?
- How does your work contribute to knowledge? How does it contribute to making a better world?

Figure 3.11 Constructivist grounded theory evaluation criteria (Charmaz 2014, p. 337-338)

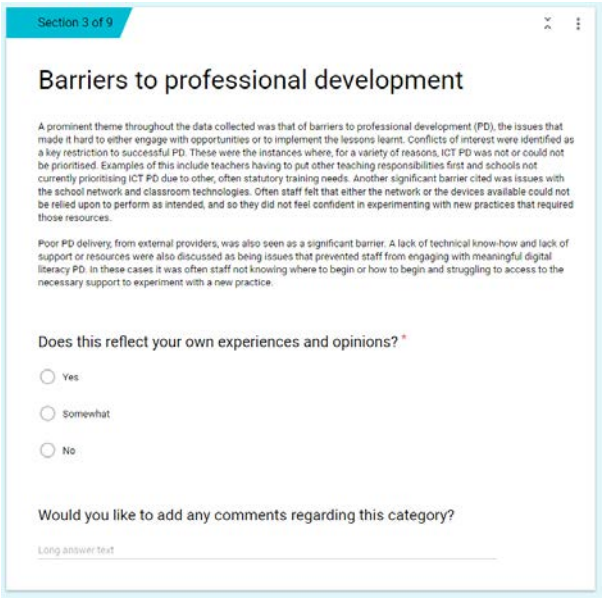
3.5.3 Strategies applied

Having reflected upon these different views of conveying trustworthiness, the researcher chose to employ the following strategies to establish the trustworthiness of her research: participant validation, peer debriefing, thick description, reflexivity, triangulation and an audit trail. These strategies were purposefully built into the design of the study whereas others, such as prolonged engagement within the field, could be classed as included within the study, though only as a result of the grounded theory method, not through intentional design.

3.5.3.1 Member checking

Effort was made to engage participants in member checking for the purpose of exploring the credibility of the findings. Following the analysis, participants were contacted via email and asked to participate in a short survey to review an overview of the findings (see Appendix G/i) and confirm that they were in accordance with their own views. A survey was chosen as the most convenient way to collect responses from participants due to their geographical spread across the city and busy schedule, meaning that bringing them together in person would be unlikely. The survey began with an explanation of the purpose of the member checking exercise, followed by a request for the participant to state which school they work in. This was a short free-text answer, rather than multiple choice, so as to protect the anonymity of the schools involved in the study. This information was collected to allow monitoring of engagement with the survey and to use prior knowledge of school contexts in relation to the participants' responses. The main body of the survey took the following format: summary paragraph of a category, mandatory multiple choice question to determine reflection of practices and a voluntary open text question to provide further detail where desired, as illustrated below.

Figure 3.12 Member checking survey



All but one category, *Use of Web 2.0*, was confirmed by more than 80 per cent of the respondents (see Appendix G/ii). In this case, the collection of the participants' school proved to be useful as the researcher was able to identify that those respondents who did not agree worked in schools with a weaker social media focus. Whilst definitive claims cannot be made based on the responses received, the replies can still be considered indicative of the overall relevance of the findings to the wider population of the study. With a twenty-two per cent response rate, and representation from all schools in the study, a clearer understanding of how well the findings represent the views and experiences of participants has been gained.

3.5.3.2 Peer debriefing

Peer debriefing was achieved through a number of methods. Firstly, the researcher chose a transcript from the main phase of data collection at random to be reviewed by the supervision team along with its codes and categories as part of the audit trail, see 3.5.3.6. This supported the credibility of the study through peer checking of the analysis process. The supervision team have experience within the chosen field of study as well as of grounded theory methodology, making them an appropriate choice for conducting the review. Secondly, the researcher participated in institution-wide dissemination events; including a student led conference and a conference poster presentation. These events served two purposes, to receive feedback from the wider research community and to support the researcher in refining the presentation and dissemination of the research. Presenting the research in a visual format catalysed new thinking about the study.

Finally, the researcher also presented at a number of conferences, both regional and national: the Teacher Education Advancement Network (TEAN) conference, The University of Lincoln's Ed.D student conference and the EMDoc Postgraduate Researcher conference. Additionally, a seminar was presented as part of the University's Institute for Education Futures seminar series. The TEAN conference was sought out for its strong links to the teacher education community and the valuable feedback on the findings and recommendations of the study. The postgraduate conferences and seminar provided access to peers within the wider research community who were able to provide feedback and guidance on the methodology and study overall. The researcher also found that presenting on the PhD at different stages in the research helped to clarify developing concepts and reflect on how the study was evolving.

3.5.3.3 Thick Description

Thick description is the use of rich, detailed accounts of the social setting within which a study takes place (Geertz 1973). This strategy is used to ensure that sufficient information is shared about the original setting of a research project, so as to allow others to judge how well the findings, or a replication of the study, may work within their own context. Within this thesis, care has been taken to provide adequate detail about the wider context of the research, for example the role of the BSF program in Leicester City schools. Though some information, where particularly sensitive or potentially identifiable, has been withheld for the sake of participant anonymity. This thick description has been primarily included within section 1.3, *the research setting*, to support future readers in making a conclusion about the transferability of this research easily.

3.5.3.4 Reflexivity

Parker (1999) describes the effect that a researcher has on their work as 'the interpretative gap'. By this, he means that there is always a difference between objects/events in the world and the way that we describe them. It is not always intentional, but as human beings we will always bring a certain perspective with us to a dataset and this will inevitably influence the findings. It is important to note that Parker (1999) does not view this subjectivity as a weakness of research, but rather an opportunity to be aware of our role as researchers and its effect on the studies we conduct. Reflexivity allows a researcher to be upfront about their

existing thoughts and feelings on a research topic, with the hope that by making these explicit these potential biases can then be avoided in the research, as the researcher is more aware of them. Also, within a constructivist grounded theory approach, the role of the researcher is as important as the role of the participant in shaping the theory that is generated from the data. Therefore, it is crucial to remain reflexive about the research design, data collection, data analysis and interpretations of findings to ensure that they truly reflect the experiences and opinions from whom they were collected. Memoing is an important tool in supporting reflexivity as it provides a space to reflect on the research process and any existing preconceptions linked to the work.

3.5.3.5 Triangulation

Triangulation of data can be sought from four different sources: theories, methods, sources, and investigators (Lincoln and Guba 1985). Within this study observations where used as a form of triangulation in that they were not designed to collect new data, but rather to confirm and clarify the data collected through the interviews and focus groups. This is triangulation through methods. The constant comparison of new data against existing data, taken from a variety of participating schools can be seen as triangulation through sources. Finally, triangulation through theories was achieved through the review of existing literature in the field. Whilst more traditional notions of grounded theory do not view a preliminary literature review as a necessary stage of research, others have noted the value of engaging with existing literature prior to commencing the study in order to heighten theoretical sensitivity. Triangulation through investigators was not appropriate for this study since the research was conducted by only one researcher.

3.5.3.6 Audit Trail

As discussed in section 3.4.2, *using NVivo*, above as well as supporting the analysis process NVivo can also be used as a means of creating an audit trail. Transcripts, codes and categories, and the memos related to these were all stored within the CAQDAS software to create a single artefact of the study that could be used to understand the methodology and analysis behind the findings. The process of memoing itself can be seen as a kind of audit. Rather than a simple paper trail of the data collected and the coding categories assigned, memos create an audit of the thought processes behind the analytic decisions made by the researcher. Using the materials discussed in section 3.5.1, *validity and reliability in qualitative research*, an audit was conducted by the researcher's supervisors, following Halpern's (1983) audit process. The audit materials included: the interview and focus group topic guide, a summary memo of one transcript written at point of transcription, detailed process notes written up from multiple memos during the coding process and the transcript itself with coding strips on adjacent pages from each phase of coding (see Appendix H). The purpose of the audit was to review the confirmability of the findings. This entailed the supervisors reviewing the data and, in light of the researcher's process memos, the findings to ensure that the route taken from one to another was clear and logical.

3.6 Ethical Considerations

In accordance with De Montfort University policy, the UK Research Integrity Office's (UK RIO 2011) Code of Practice for Research and Research Councils UK's (RCUK 2017) Policy and Guidelines on Governance of Good Research Conduct were referred to. In addition to these documents the British Educational Research Association's (BERA 2011) Ethical Guidelines for Educational Research were utilised, given that this thesis was conducted within the context of UK compulsory education. BERA (2011) believe that all educational research should be conducted within an ethic of respect for the person, knowledge, democratic values, the quality of educational research, and academic freedom.

This links to work concerning the feminist approach to ethics, which focuses on the moral language of care and responsibilities, as opposed to the perceived, traditional, masculine-focused moral language of justice and rights (Tong and Williams 2011). Given the nature of this study, the use of data generated at the individual level and analysed into a grounded theory, it is argued that an ethics of care, responsibility and respect is the most appropriate model. The data handled within this thesis is inherently personal and so should be dealt with sensitively. BERA (2011) define four categories of responsibility within educational research ethics: Responsibilities to participants; responsibilities to sponsors of research; responsibilities to the community of Educational researchers; and responsibilities to educational professionals, policy makers and the general public. These will be used to guide the discussion of how ethical considerations were applied within this study.

3.6.1 Responsibilities to participants

It is a researcher's duty to operate within an ethic of care and respect for individuals involved in the research they are conducting. Participants should be treated fairly, respectfully and without prejudice. BERA (2011) notes that an ethic of respect for participants extends beyond the researcher, to other participants within the study, highlighting the important role that the researcher takes in data collection involving multiple participants, to ensure they also act respectfully to one another throughout the course of the study. Within this particular study, all participants involved in the research engaged voluntarily and as deception was not a necessary element of the study, the researcher was able to be transparent about the research, purpose of data collection and participants' role within the research.

At the beginning of each session, the study was introduced to participants, alongside a participant information sheet (see Appendix C) that participants could take away, including contact information for any future questions. Time was allocated at the beginning of each session to any questions on the part of the participants, though these did not often arise. Written consent was then taken from each participant. All individuals engaging with the research were made aware, through the information sheet provided, of their right to withdraw from the research at any time without consequence.

Participation in the study was largely based upon good faith from previous research experiences and relationships within the school communities, so no additional incentives were necessary. Whilst the researcher did not know the participants on a personal level, an affable

working relationship had been maintained from previous research collaboration. Refreshments were provided, however, as a show of thanks to participants for giving up their time, at the end of the school day, to engage with the research. Whilst no detriment was foreseen to participants through their engagement in the research, the names of individual members of staff, and their respective schools, have not be seen shared within this thesis in order to counteract any unforeseen negative outcomes.

Participants were informed of their importance in the research and how their data would be collected and stored, including the use recording equipment where appropriate. Participants were made aware that data would only be viewed by the researcher and the supervisory team. Only data necessary to the study were collected. All data were anonymised and where quotations from staff have been used they are not shared alongside any data which may identify the individual or school in which they work, instead a unique referencing number is used in their place to identify participants.

Audio recordings of focus groups and interviews were taken using a password protected device and were destroyed once transcription was complete. All data pertaining to the study has been stored on a password protected computer and handled in accordance with the 1998 Data Protection Act and the University's Research Records Retention Policy.

3.6.2 Responsibilities to sponsors of research

A sponsor is anyone who funds a research study, or who provides access to data or participants (BERA 2011). Whilst this thesis does not have external funding, the PhD was supported by a bursary through De Montfort University and so the institution, along with the schools involved in the study were viewed as sponsors of the research. The schools were viewed as sponsors here, rather than as participants as they are being referred to in their role as institution, with the individual staff members as the participants. Working within an ethic of care and respect for these stakeholders, the researcher has taken great care to ensure quality in the research.

As discussed in sections 3.2, *research strategy*, and 3.3, *research methods*, the strategy and data collection methods chosen for this study were considered in detail to ensure the best possible fit to the research aims. The trustworthiness of the study and the subsequent data collected has also been demonstrated above (see section 3.5 *Trustworthiness*). Alongside these measures, the researcher has taken steps to ensure the accessibility of the research findings for other practitioners, the participants of the research and the general public. Through presentation at national conferences, engagement with university-wide dissemination competitions and use of a personal research blog and social media presence, the development of the study and findings have been shared as the research has progressed.

3.6.3 Responsibilities to the community of Educational researchers

The most effective way for a researcher to address their ethical responsibilities to the educational research community is to strive for high standards of research conduct at all times. Misconduct in the form of fabrication of findings, falsification of data, plagiarism of research and, the misrepresentation and mistreatment of participants should be avoided at all costs

(RCUK 2015). The central role of memo writing, and with it reflexivity, within this study helps to ensure a clear audit trail of the data collection and analysis as well as encouraging the researcher to be aware of any potential biases in the interpretation of the data collected. High standards of research conduct can also be ensured by working in line with UK RIO's (2011) seven principles for research.

Table 3.13 UK RIO (2011) Principles for research

Excellence	All researchers should strive for excellence in their research.
Honesty	Researchers should ensure the honesty and accuracy of their data and findings.
Integrity	Researchers should conform to all relevant legal and ethical requirements.
Co-operation	Institutions should be open to the exchange of ideas, data and results.
Accountability	Researchers should acknowledge that they are accountable to their participants and the wider public in their work.
Training and skills	Institutions should support the skill development of their researchers and researchers should be open to engagement with training.
Safety	Researchers should ensure the safety and well-being of their participants and themselves throughout a study, working to avoid unreasonable risk or harm.

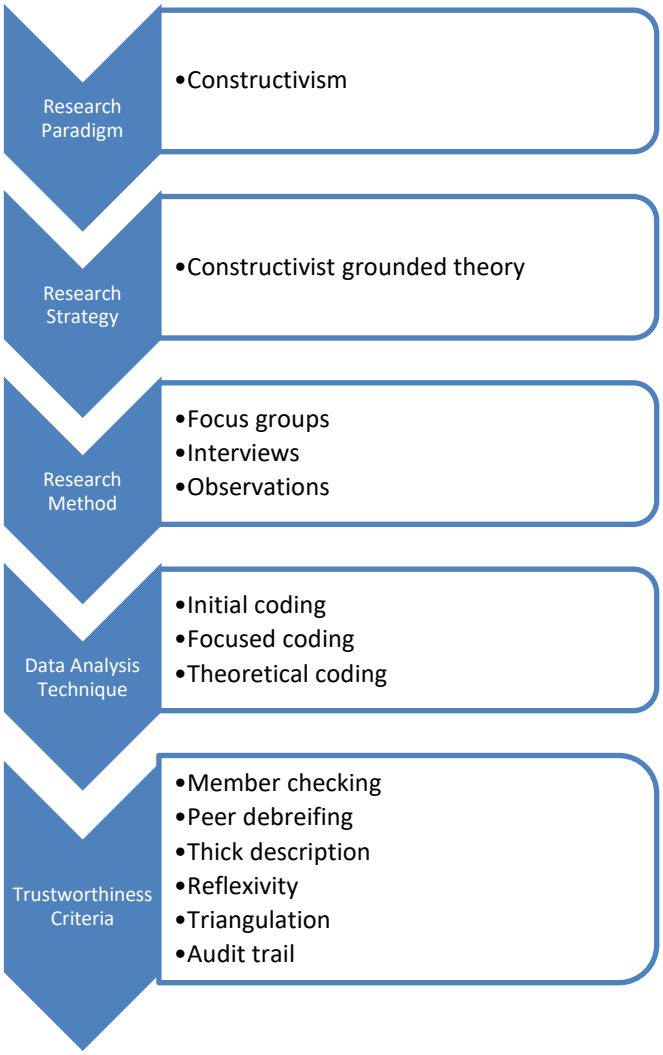
3.6.4 Responsibilities to educational professionals, policy makers and the general public

Similarly to meeting their responsibilities to the sponsors of research, in order to work respectfully of educational professionals, policy makers and the public a researcher must consider how the results of their research can be effectively distributed. In particular, the practical application of research findings should be made easily accessible, and presented in an appropriate style for all audiences. As discussed above, the researcher engaged in a number of dissemination events, including presentation at national conferences, regional conferences, seminar series and a University poster competition. In each case, the work was presented in a form suitable for the intended audience. For example, the poster competition was an institution-wide event and so needed to be presented using language appropriate to a non-specialist audience.

3.7 Chapter Summary

This chapter has presented the rationale for the research design, from the identification of the research paradigm within which this study takes place to the methodological criteria used to establish the trustworthiness of the findings that have been generated. These methodological choices are presented below, using Dyson and Brown's (2006) conceptual framework.

Figure 3.13 Final research design



It can be seen that with its focus on interpretation, the individual's construction of knowledge, and theory building, the constructivist paradigm paved the way for a study that utilises participant voice to explore the processes within teachers' DL CPD. It also strongly influenced the style of grounded theory chosen for the study. The implementation of Idrees *et al.'s* (2011) four stage model of grounded theory was crucial to the successful design of the research as it supported the researcher in creating a study that was suitable and achievable within a PhD study, as well as adhering to the key elements of grounded theory research. It is the adherence to these key elements that ensure rigour and coherence in a grounded theory study (Idrees *et al.* 2011).

The data collection approach was designed to be flexible and responsive to the needs of the participants. The timing of data collection phases was also carefully chosen to be of the most convenience to the participating schools. In this way, the researcher aimed to demonstrate their understanding of the existing pressures on the participants' time and build a relationship

of mutual respect with participants. The data analysis technique employed allowed for the use of CAQDAS software, and further professional research development for the researcher. The process of the analysis has been illustrated with examples of the use of CAQDAS software, to show how it can benefit a research student throughout PhD study.

As discussed in the introduction to this chapter, these choices greatly influenced the methodological strategies used to ensure the trustworthiness of the study. The purpose of these strategies was twofold: first, to ensure the representativeness of the data and interpretations shared; and second, to provide a transparent account of the study to aid future readers in understanding and potentially replicating the work.

4. Findings

By following the grounded theory analysis approach described in section 3.5.1, *validity and reliability in qualitative research*, codes and categories were developed from the data. Memos were created throughout the process and will be included within this chapter, where appropriate, to help illustrate the development of the findings. Here each of the prominent categories will be defined, presented and described. Categories were chosen for presentation if they linked to all seven of the data sources and were therefore theoretically saturated. Out of a total of ten categories in the data, seven met this criterion. Whilst this cannot adequately portray the richness of the data in its entirety, it provides a sufficient outline of the pertinent findings, within the constraints of the PhD thesis. A broader discussion of these findings, in relation to the wider research context, can be found in the following chapters.

The key categories presented within this chapter are:

- Barriers to professional development;
- Professionalism;
- Positive elements of professional development;
- Learning needs;
- Support systems;
- Use of web 2.0;
- Professional development strategies.

These will be discussed using a three-part format: firstly, categories will be defined within the parameters of the study; secondly, a conceptual map for each category will be presented to illustrate the main themes within the category; and thirdly, the main themes will be described using quotations and memos where appropriate. Within this study, main themes were identified as those which had more than one reference within the data, linked to more than one source.

To conclude the chapter, the findings of the observations will be presented. The purpose of the observation phase of the study was not to generate new data, but rather to clarify and witness in practice the emerging categories within the data. Observations were not audio or visually recorded, but field notes were taken during the sessions and these notes were used to compare with the focus group and interview data.

4.1 Barriers to CPD

The most prominent theme within the data was that of barriers to PD. These are the issues that made it hard to either engage with opportunities or to implement the lessons learnt. They varied in nature, from elements of unsuccessful CPD sessions and school-wide matters to the personal concerns of the individual teacher. It is important to note that whilst barriers emerged as the most frequent category within the data, the overall tone of the data collection sessions was not negative. This suggests that whilst a well-known factor of teachers' PD, barriers are the underlying issue, rather than the main focus of teachers' reflections.

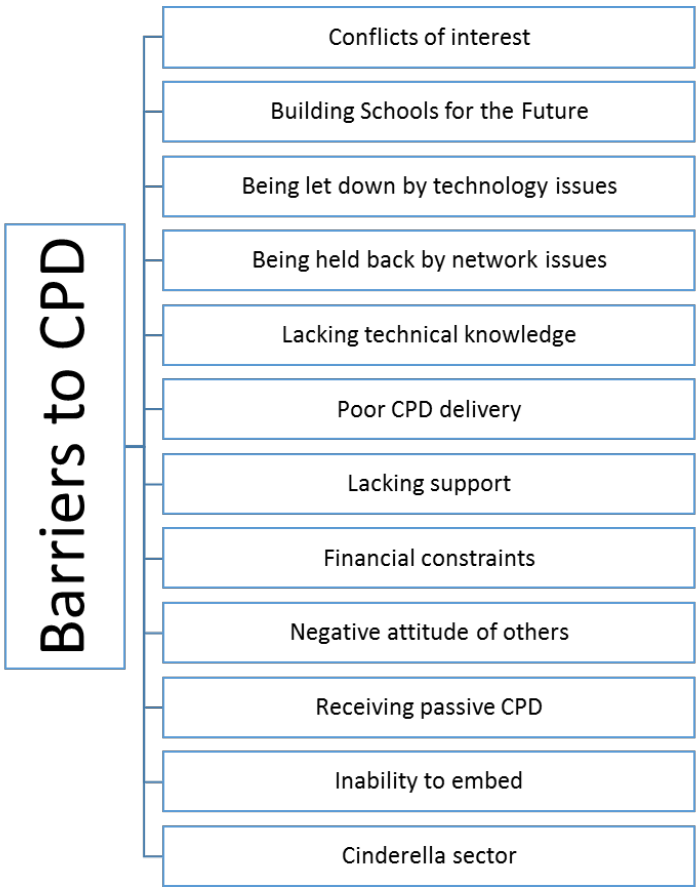


Figure 4.1 Barriers to CPD concept map

4.1.1 Conflicts of interest

Conflicts of interest were the instances where, for a variety of reasons, CPD involving DL and classroom technologies was not or could not be prioritised. Most often this conflict arose in the form of a teacher having to choose between experimenting with new technologies and digitally literate practices, or keeping up with the myriad of other responsibilities of their role. Classroom management was cited as one of the key concerns which conflicted with staff use of technologies. As explained in the excerpt below, some staff felt that by implementing practices with technology in their classroom, they ran a risk of something going wrong, which would lead to them needing to turn their attention away from classroom management.

> *"So if you're wasting your time, trying to get a piece of software to work – you've lost the kids! And the whole time your back is turned trying to do that [S laughs knowingly] the kids – well, you've lost them. You have to be on it and you have to manage the classroom."*
>
> (Focus group, S2T8)

Time management was seen as another potential conflict. This was highlighted both in terms of managing time between new practices and existing teaching responsibilities, such as marking or lesson planning, and also in terms of teachers' free time. Some participants, as

illustrated below, believed that increased use of technology for CPD and classroom practice could result in the infringement of their personal time.

> *"If you're not careful, we're all in a position where we do a very vocational job, you know, I think it's safe to say everyone sitting around this table goes above and beyond in the nature of the environment that we're working in - so there are times when you just have to switch off. Particularly when you've got your own family, and that's something I've struggled with at various points over the last couple of years, it's going 'do you know what this switch has to go off so I can actually spend time sat with my kids', playing on the Xbox with my children, talking to them about what they did at school. Rather than coming in going 'right, you lot are going to bed now I need to sit down and do some work and do an online course'"*
>
> (Focus group, S1T11)

Alongside conflicting teaching responsibilities, participants also noted that schools were not always in a position to prioritise DL CPD. Most often this was due to the statutory requirement to meet certain training needs, such as safeguarding, or responding to urgent training needs, as in the example given below. In each case, it had been decided that other CPD opportunities took precedence over DL CPD.

> *"What happened this year was I was supposed to do some CPD in a designated CPD slot which was a 2 hour slot and I was going to do the lot all in one go and I was told a couple of weeks before it that I couldn't do it because we have to have the training for extremism, or whatever, and that had to take preference, which it does, and that was the only spot they could have so I got bumped out of that - so I've got pushed into ... there's no more slots basically so I've had to find another time to do it, which I don't know if that'll be good or not."*
>
> (Interview, S3T1)

Other instances were seen as a lack of value placed on DL CPD by school leadership. Participants felt that in those circumstances it could be hard to proceed with developing practices if support from higher up in the school was not present. In one interview it was noted that more onus should be put on senior leadership to support DL CPD, as this was seen as the only way for successful progress to occur.

> *"If someone goes away and comes up with a great teaching and learning tool then that's good for them and everyone gets very excited about it but you know if someone goes away and does something with ICT, it often goes unnoticed or is not valued in terms of you know the worth that leadership and management put on these kinds of things. Obviously if they're not big on ICT themselves perhaps they don't appreciate the thought and the effort and the skills that went into developing that piece of work and the time, you know, and the energy and all sorts of things."*
>
> (Interview. S7T1)

Finally, a conflict between wanting to implement practices with technology and not wasting time on gimmicks and fads was expressed. Teachers were wary to invest too much time and effort into new technologies and services due to the speed at which they can lose popularity, and then as often happens in that case, cease to operate as a service. One need only consider the past popularity of MySpace and MSN to see how quickly and thoroughly online services can fall into obsolescence.

> *"But, you know, some of it just isn't worth investing in because it's just a fad and or a fashion and it's, you know, going to have disappeared by next year."*
>
> (Focus group, S2T4)

Regardless of the root cause of the conflict, what can be seen here is that DL and ICT are often not viewed as equally as other topics for PD. Due to this these opportunities are often not offered, cancelled in place of other opportunities or, when available, are not valued by those in higher positions in the school, which can reduce the impetus for some staff to engage with them.

4.1.2 Building Schools for the Future

As discussed in section 1.1, all of the schools participating in this study have, between 2007-2015, been either rebuilt or refurbished through the BSF programme. A significant element of the build programme was the implementation of new infrastructure and classroom technologies. The participants noted that over the last few years, many of the schools have experienced teething problems whilst settling into their new buildings and so it is unsurprising then that this should be one of the topics raised throughout the data collection.

Key issues arising around the BSF programme are the reduction of in-house technical support, an expectation that teachers would know what technology they need and complications with managed services due to external approval of school systems. Of particular concern was the perceived increase in volume and complexity of available technologies, alongside a decrease in on-site support. In some instances, staff noted having to wait days or weeks for help with technical issues. As cited below, this reduction in available support has led, in some cases, to teachers not feeling confident about trailing new approaches with technology.

> *"But that's the end to playing, like for me working in a school pre-BSF and after, when we used to have a technician on site I was far more likely to go for it and have a go because I knew that if it was going to go wrong in the middle of lesson I would just call them up and they would be straight down. So BSF was all about Building Schools for the Future but then there's no ICT support there to actually support you being able to do that. So actually, in terms of ICT, in many respects we've ended up going backwards..."*
>
> (Focus group, S1T3)

4.1.3 Being let down by technology issues

The unreliability of classroom technologies is a major barrier to the implementation of DL and ICT CPD. Network issues exacerbated this concern, and are dealt with separately below (see

4.1.4 *being held back by network issues*). Staff often felt that the devices available could not be relied upon to perform as intended, and so they did not feel confident in experimenting with new practices that required those resources. Examples, such as the excerpt shown below, were also given of CPD experiences in which the technology was not functional and so effective learning could not take place.

> *"When we moved into this building it was terrible, we had all these new systems that most of us hadn't used before and then half the systems weren't actually working so we'd go to the training session and the trainer would say 'ok this is the software that we are going to try, oh no it doesn't work, so let me just give you a piece of paper' - you know just awful."* (Interview, S7T1)

> *"I suppose it's similar to what D1 just said with the other CPD, the problem with technology is that it isn't reliable and so, particularly in an environment like this, if you relied heavily on ICT in your classroom and then that goes wrong, you're resulting always then back on what you know which is, you know, writing on the board, resources, cutting and sticking, you know, like card sorts and everything else that still works."*
>
> (Focus group, S1T3)

There are links here to the earlier *Conflicts of interest* theme, in that teachers feel that they need to make a choice between non-digital, reliable teaching methods and newer digital practices which may not always work as planned.

4.1.4 Being held back by network issues

Alongside the unreliability of classroom technologies, there have also been a number of concerns raised about school network problems. This has caused a similar response to the issue above, in that staff do not feel confident to experiment with new teaching techniques when they will be reliant on the network, due to a lack of trust in the ability of the network to work correctly. In a number of sessions, as illustrated in the excerpts below, teachers discussed attending CPD where a tool or approach was being demonstrated that required network connectivity. In these cases the individuals often felt restricted by their school network and unable to embed any of the learning they took away from the sessions.

> *"There was a thing where you could make like a book with hot spots and you could see extra content when you went over the hotspots - now I thought that was really good, I tried to do that with my students but again I couldn't upload anything because even the Wi-Fi we had would stay connected to the Internet but that was it, it wouldn't upload the file size was too huge."*
>
> (Interview, S3T1)

> *"So basically, if you haven't got wireless that works it doesn't matter what training you give people because their laptops aren't going to work anyway and, you know, we've still got issues running all the way through, things like that so, and I'm quite shy of turning around to people and saying 'this is all the interactive stuff that you can do'*

when you can't get the interactivity to work because the network's not doing what it's told."

(Focus group, S1T11)

"Being digital learning, this year I've been on a lot of things and I've been out to other schools and I've seen so many great things – but with everything I've seen, I've had to then think about in my head 'how would this work back on our network?'"

(Focus group, S6T2)

For those participants who also support colleagues in the school with CPD, network issues could also hold them back from introducing peers to new teaching techniques and devices. This was often due to a desire not to 'put them off' from trying new technologies in the future, should the network fail during the CPD. In three of the seven schools from the main study, the school's wireless network was seen as a major barrier to CPD.

4.1.5 Lacking technical knowledge

Where participants cited that they were lacking technical know-how, they were unsure of where to begin or how to begin and struggled to access the necessary support to experiment with a new practice. This was most often in relation to technical skills needed to set up or personalise a service, such as a virtual learning environment. It was noted by one participant, that when teachers are relied upon to be technicians, to be taking on that role for which they are not qualified, PD is unlikely to succeed.

"That was one of the points that I was going to make with the technology, if you're not very tech savvy, you're almost scared to use it."

(Focus group, S1T2)

"Yeah I have to say, I've not even got a GCSE in IT myself..."

(Focus group, S5T1)

"I'm sure that we could have programmed [Virtual Learning Environment service] to do some of this stuff but we didn't have anyone to do that and no support to do that..."

(Interview, S3T1)

4.1.6 Poor CPD delivery

It is crucial, for CPD to be successful, that the facilitator for the session is able to deliver the learning proficiently. A number of examples were provided, however, where this was not the case. Participants noted that with CPD regarding the use of technology, those delivering the training sessions are not necessarily educators. Some trainers may be sales staff and others, whilst trainers, do not have a background in the education sector and so may not be able to relate the CPD to the school's specific context and needs.

"Sometimes it's difficult with technology, and CPD with technology because sometimes you just think 'are they trying to sell me this or are they trying to show me how to use it effectively for our pupils?'. And that's difficult, finding good CPD around technology, for that very reason."

(Focus group, S2T14)

PD delivery was also considered poor when the facilitator was not able to answer questions regarding the tool or technique, suggesting that they did not have an in-depth knowledge of what they were teaching. In these instances, participants claimed to lose confidence in the session and the possibility that the tool or technique could be successfully embedded into their practice.

> *"Either the person leading it doesn't seem to know what they're on about, or you know, doesn't instil any confidence and therefore they're thinking "god if this expert doesn't know, I'll never, I won't be able to do it"*
>
> (Focus group, S6T3)

4.1.7 Lacking support

For those participants with less confidence in their DL, skilled colleagues and technicians are an important resource when implementing new approaches from CPD. If that support is unavailable for some reason, participants noted that they were unlikely to try to implement new practices, for fear that they would not know what to do if something went wrong. This is exacerbated by the issues highlighted in 4.1.2 *Building Schools for the Future*, where due to increased technologies without increased technician roles, the availability of support, in some schools, has decreased.

> *" ...too often, jumping on that, is the fact you want something based on technology or something and you can't get hold of someone - because obviously you're all based over the two schools and we've all been in that situation where "Is [colleague] in?" "no", "Is [colleague] here today?" "no", "have you seen [colleague]?" "no" - ok I'm stuffed I can't do anything then because there isn't, you know, there isn't that knowledge and skills base..."*
>
> (Focus group, S2T8)

It was also noted that, as this is not their intended role, many school technicians are not pedagogically knowledgeable. This can sometimes result in difficulties when teachers look for support, as they do not have a support role available that bridges the gap between technical and pedagogic needs.

4.1.8 Financial constraints

Five of the seven schools who participated in the main study, noted that CPD had not been embedded on some occasions due to financial constraints. This could be in relation to needing to purchase hardware to run certain services from, to pay for site licenses for services and to pay for additional support in school. Some of the smaller schools in the sample noted that they often experienced issues with site licenses for software as the cost models are usually based on much larger school numbers, meaning that they would be expected to pay the same when they have much less staff and students.

> *"Anything that involved money, I had to wait until a point that we could do that..."*
>
> (Interview, S3T1)

4.1.9 Negative attitudes of others

Noted primarily by those who offer support in CPD to others, negative attitudes from colleagues were seen to hamper successful CPD. The consensus, as illustrated below, appeared to be that some staff members did not see the value of CPD in the way that others might, and may even need to be coerced into participating. There was a belief that all staff should want to engage with CPD, for its own benefit, and that those who did not feel this way were a barrier to the learning of others.

> *"...I wonder if those people who dismiss things like [school CPD bulletin] 'oh another bloomin' bit of paper, I'm not reading that' would consider that professionalism means continuing your own development in the same way... Because even if they were to say it, they're not modelling it..."*
>
> (Focus group, S6T3)

One participant noted that this seemed to be more pronounced with relation to DL CPD, as often staff did not take up this kind of CPD independently. Whilst in other aspects of their teaching, such as subject content or classroom management, they may look into information and resources of their own accord, his experience of delivering DL CPD was that others did not feel the same impetus to take responsibility for their DL development.

> *"You know with ICT people expect to be ICT trained don't they, they expected you to teach them it there's no kind of impetus there's no need to go off and brush up on it like you do on all the other parts of your teaching it's kind of weird."*
>
> (Interview, S7T1)

4.1.10 Receiving passive CPD

When describing experiences of CPD that they had not found impactful on their practice, the lack of active learning included in a session was raised on eight occasions. These experiences were described as sessions in which they were presented to, with the tool or technique demonstrated to them, but without the opportunity to practice or play themselves. There was a consensus that teaching techniques with technologies are highly practical and so CPD should reflect this.

> *"I wanted to try bits as well, to see properly how it would work, rather than just listen."*
>
> (Focus group, S5T5)

> *"I think learning ICT is a very practical thing, being lectured about it is not good."*
>
> (Interview, S7T1)

This is connected to section 4.4.1 *Active learning*, where participants note that one of the key elements of successful and impactful CPD is being able to actively engage with the learning experience. This is discussed in more detail below, however, the inclusion of passive CPD as a barrier to learning consolidates this viewpoint.

4.1.11 Inability to embed

If CPD cannot be embedded quickly following a session, it is unlikely that it will have a significant impact upon a teacher's practice. This is similar in principal to the issue described above, in that staff noted that when they were not able to put CPD learning into practice shortly afterwards, they would often then forget how to go about setting up the technology or service and so would then not be able to implement it without further support. In a number of cases, this issue linked to 4.1.3 *Being let down by technology issues*, as the CPD was for a particular device or service that then could not be used because of malfunctioning equipment.

> *"Because you can have a really good session, and then you don't use it for a month and then go and try it and that's when you freak out and you can't do it."*
>
> (Focus group, S2T10)

4.1.12 Cinderella sector

The label for this theme was taken from the *2020 and beyond* Futurelab report, in which it was acknowledged that the education sector was often the last to engage with new technologies, 'constantly receiving the hand-me-downs from the business, defence and leisure industries and then trying to repurpose them for educational goals' (Daanen and Facer 2007, p.4). It used here to represent this idea and also to include the growing notion that the education system is not currently preparing learners for modern living and working. This sentiment was shared by some of the participants, as they tried to contextualise the issues surrounding their CPD experiences.

> *"I was reading something, what last week, where people in the industry were complaining about the fact that school doesn't really prepare kids for the outside world anymore because we're so far behind in technology. Well I mean, you know, we're 10 years behind where industry is so what exactly are we preparing the kids for?"*
>
> (Focus group, S2T15)

> *"they will soon be so much more proficient than us using those devices that we will end up looking obsolete and irrelevant because oh well I know I could do this on my phone and send it to my teacher on our essay, but teacher says I can't have my phone out at school so, you know, teacher's an irrelevant old relic."*
>
> (Focus group, S6T3)

4.2 Professionalism

By trialling the data analysis approach with the pilot study data, see section 3.4.5, it was found that the data pertaining to the first question within the interviews and focus groups needed to be coded separately to that of the main question. The first question in the data collection asked participants what they thought it meant to be a teaching professional. Since this is a different question than the main focus of the data collection, to compile experiences of CPD, it was felt that the data should be analysed separately so as to develop from it the most representative codes possible. Seven themes emerged from the professionalism question data, these are presented below.

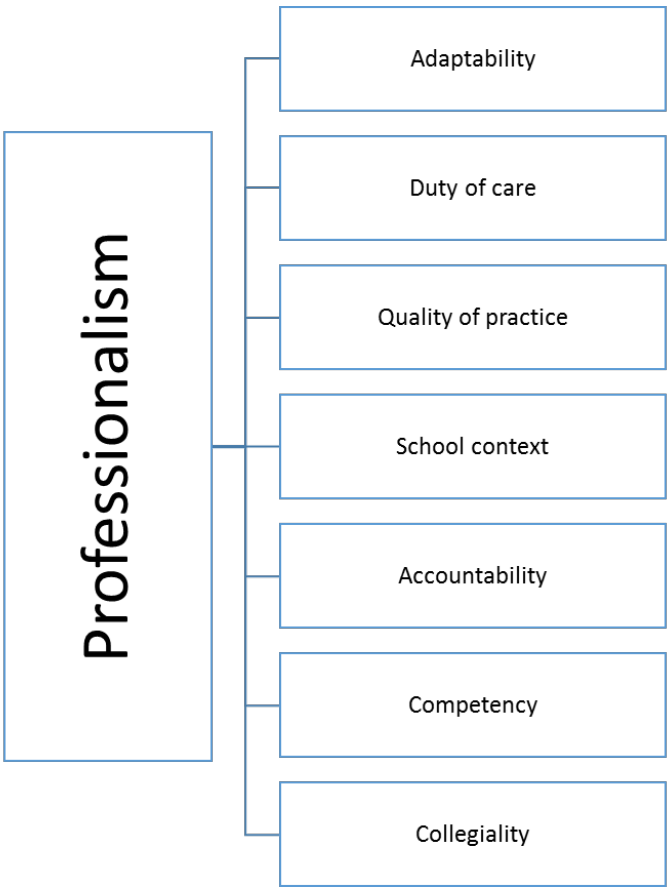


Figure 4.2 Professionalism concept map

4.2.1 Adaptability

The most prominent topic across the discussions was that of adaptability. All seven schools discussed this element of professionalism, with a total of 34 references across the data. This label was chosen to represent the necessity for teachers and other school staff to respond to change within the school environment. Discussions surrounding this topic were linked both to changes in general teaching practice and more specifically to the changes associated with educational technology. The need to respond to change was not seen as negative, but rather a necessary feature of working within education.

As educators staff have a responsibility to their learners to maintain current knowledge and understanding of the key issues surrounding their subject area, as well as their pedagogic practice and use of classroom technologies. With the rapid pace of technological change, it is ever more crucial for educators to be aware of how their students are engaging with new technologies, and how these might influence learning. There is also potential here to make use of new technological practices, to bridge the gap between students' school and home lives. This was summarised by one participant as:

> *"I think there's also that thing about professionalism and being current, making sure that your knowledge and your understanding of everything is as up-to-date as it can be."*

(Focus group, S5T2)

Tied to this is the notion of lifelong learning, which appeared frequently within this category. In order to keep up with latest knowledge and practice within a field, staff must be willing to continually develop. Many staff see continuous learning as an expectation of their role and something which enables them to be the best teacher they can be.

> *"I would agree with [R] in that as professionals we are continually learning every day, we're a learning community."*
>
> (Focus group, S5T3)

4.2.2 Duty of care

Another element of professionalism to come across strongly from the focus groups and interviews was a sense of duty of care, of fulfilling a necessary role for the public good. This view of professionalism is centred around doing the best for students, not only as learners but as individuals to whom school staff are responsible. Of the seven schools involved in the research, four highlighted duty of care as representative of their view of professionalism, making 23 references to the topic. Three of these four schools were SEN or specialist provision, where the pastoral element of their role was also more strongly felt.

> *"I think it's more than just teaching your subject, because there's the whole pastoral level as well. So it's about being loco in parentis, it's about listening to your tutor group, or even if you're not in a tutor group, listening to kids that just come to you and open up and what you can do with that."*
>
> (Focus group, S1T9)

This aspect of professionalism aligns strongly with traditional views of teaching, and of professionalism more widely (Millerson 1964). It is also interesting to find that these statements were more common than those of 4.2.5 *Accountability*, given the rise of managerial professionalism as discussed in the literature.

4.2.3 Quality practice

The ability of a teacher to demonstrate high levels of quality in their teaching practice was also viewed as an indicator of a teaching professional. Many teachers endeavoured to inspire their students and colleagues, to deliver their lessons in an engaging manor and to support their students, through a range of techniques, to become self-sufficient and confident learners. They noted that they were open to opportunities to share their practice, not only with their colleagues within their school, but also with other professionals where appropriate. They also highlighted the importance of reflecting on their practice and thinking critically about how they can best support their students. These aspects of teaching were viewed as quality practice, and they are what teaching professionals strive for.

> *"Delivering high quality learning experiences so that all children make progress."*
>
> (Focus group, S2T4)

4.2.4 School context

From the focus groups and interviews, it would appear that school context and culture have a significant impact on how school staff view their professionalism. This is something I have been considering since early in the study, as demonstrated by the memo below, as individuals either mould their perception of professionalism to fit the identity of the school, or perhaps, are drawn to the school as it fits their specific views.

> **Memo 4.1 29/11/2016**
>
> …new elements were touched upon in this group, specifically with a focus on their pastoral role and of being a stable figure in pupils' lives; someone students can rely on. These responses strongly reflect the context and ethos of the school, as many of their students come from dysfunctional homes.
>
> > *"I think it's more than just teaching your subject, because there's the whole pastoral level as well. So it's about being loco in parentis, it's about listening to your tutor group, or even if you're not in a tutor group, listening to kids that just come to you and open up and what you can do with that."*
>
> If we then reconsider the responses of the pilot study participants, we can see that their discussions also reflected their school's context and culture. The SEN school staff saw promoting accessibility and enabling participation as a key element of their professionalism and the Computing teacher saw inspirational and creative teaching as key to her professionalism.
>
> These findings suggest that a third category may be needed alongside *values-based professionalism* and *responding to constant change* – that of *reflecting school culture*.

It is particularly interesting that all fourteen instances of the category within the data come from SEN and Specialist Provision schools. This may be due to the fact that each SEN and Specialist provision school in the city caters to different learning needs; whilst one specialises in supporting students with autism, another specialises in profound and multiple learning difficulties, another in emotional and behavioural difficulties and another still in physical disabilities. It is unsurprising then that they perceive themselves to have very distinct identities as schools, very separate from mainstream and other schools.

4.2.5 Accountability

Given the increasing rise of teacher accountability within education, with public league tables and the significant amount of paperwork associated with daily classroom practice, it is unsurprising that accountability was noted by five of the seven schools in the study. Making a total of thirteen appearances in the data, this topic relates to the external expectations of school staff.

> *" ...I suppose it's about upholding a certain standard of various areas of life - so behaviour, dress, CPD, you know, current knowledge and understanding, fulfilling your role and that sort of thing... It's a standards meeting thing isn't it professionalism"*
>
> (Interview, S3T1)

Conversations linked to this theme were largely in relation to meeting the Teaching Standards, the Government defined minimum practices required to achieve qualified teacher status (QTS). There were also links made to meeting school expectations, enforcing school expectations and living up to the role of someone in a position of responsibility.

4.2.6 Competency

The category of competency was generated to represent the need for professionals in education to be sufficiently skilled, qualified and experienced to fulfil their duties to learners. Competency in the classroom involves both practical skills and pedagogic knowledge. This theme encompasses both qualifications, such as meeting QTS, and obtaining the wider skills necessary to support learners. Five of the seven schools discussed this element of professionalism, a total of twelve times.

> *"...for me to be truly professional in the context of teaching one must have engaged with and obtain qualified teacher status. That's no disrespect to our colleagues, teachers who are unqualified teachers but I think to maintain the integrity of the profession one must have qualified teacher status."*
>
> (Focus group, S6T3)

4.2.7 Collegiality

This aspect of being a teaching professional focuses less on individual teaching skills and mentality, and more on the ability of a member of school staff to work effectively and productively with their colleagues, for the greater good of the school. Collegiality is based upon respect for professional expertise and is a reciprocal relationship, where colleagues work together for mutual benefit (Fielding 1999). Given the prevalence of internal CPD within this study, 4.4.2 *utilising internal expertise*, it is unsurprising to see collegiality recognised as part of a teaching professionals' role.

> *"I think also within the school support: sharing your knowledge and expertise and I think that's also part of your role."*
>
> (Focus group, S5T13)

4.3 Positive elements of CPD

This category relates to those features that, in the opinions of those interviewed, are most likely to result in impactful DL CPD. They are the strengths that participants identified from their experiences. The concept map below shows the main themes that occur within the category, and it can be seen that three of Desimone's (2009) five elements of effective PD are covered here: active learning, duration and collaboration. The use of internal expertise to drive forward CPD is also a prevalent topic here, though not discussed often within the literature.

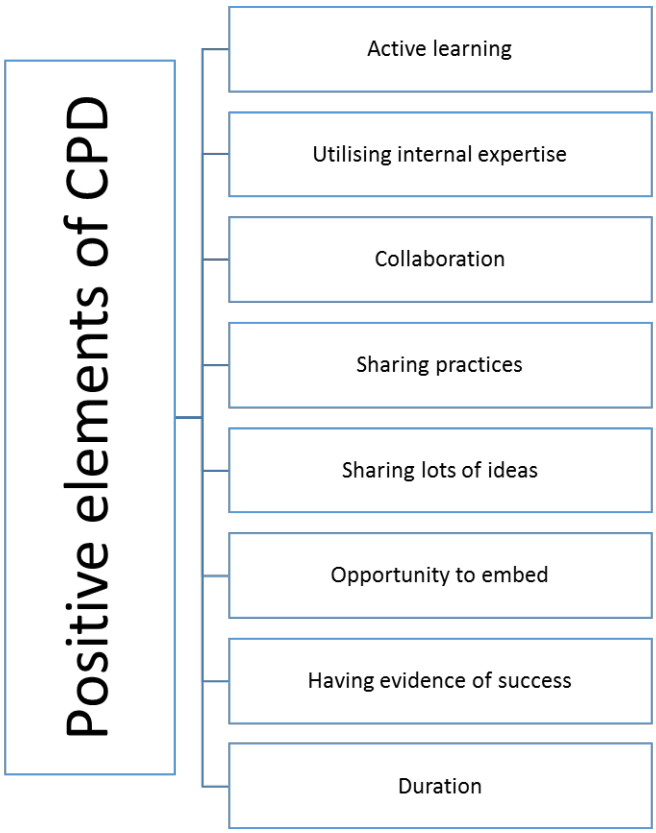


Figure 4.3 Positive elements of CPD concept map

4.3.1 Active learning

Active learning was identified as crucial to positive experiences of CPD, where those involved are given ample opportunity to experiment and play with new technologies and tools and to use the CPD as a springboard for implementation. Linked strongly to 4.1.10 *receiving passive CPD*, this theme highlights the examples of CPD in which participants were supported in their learning through the time and space to experience, investigate and play with new teaching approaches, devices and services.

> *"So it was really good to have the time to sit there and at least make a start even if you didn't finish something you at least made that contact with what you're supposed to be engaging with."*
>
> (Focus group, S7T1)

It was also noted that having the opportunity to experience the new approach or technology, from the perspective of a student, was an effective way to learn. This approach to CPD allowed participants to get a feel for how a new approach might work in their classroom, and the experience necessary to reflect on its appropriateness for their learners.

> *"She was, we were the students, and she was there being the teacher and we were like 'oh this is brilliant – if I was a kid in her class I would love this'."*
>
> (Focus group, S1T3)

4.3.2 Utilising internal expertise

Utilising internal expertise was also seen as a beneficial element of CPD. Where more knowledgeable staff are available in the school, teachers prefer to learn from their colleagues as they understand the unique setting of the school and are able to relate new practices to their specific context. Having access to expertise within the school also allows for easier follow up and questions that arise from more experimentation. From the perspective of senior leaders, it is also a much more cost-effective approach to CPD.

> *"we have recreated that model of ok let's start with the knowledge we have within the organisation, within the Academy and let's tap into that and disseminate that more widely and sometimes that means that other colleagues must facilitate the empowerment of their colleagues to do that."*
>
> (Focus group, S6T3)

4.3.3 Collaboration

Working alongside others during CPD can provide teachers with a learning community and support system throughout their development. Particularly when the collaborative learning takes place within the school, the individual is surrounded by others who are at the same learning stage and who understand the context within which the learning will be applied, making them valuable peers in the CPD process.

> *"We met once a week, but then we also met during the week as well and even in the holidays, I we knew that we had a test coming, so the staff that were doing it all worked together and supported each other and that was really good."*
>
> (Focus group, S1T1)

It was also noted that joining local networks of teachers, as part of their PD, supported them in taking their practice forward. This was achieved through the sharing of practice across the network, widening awareness of available resources and creating a support system for individuals when trialling new teaching methods. One participant noted that working in a school can get very isolating, and so networking supports them in branching out and broadening their knowledge and understanding.

> *" ...joining these networks has been really important, you see what's going on in other schools..."*
>
> (Interview, S3T1)

> *"I'm part of the DigiLit group so we have meetings there and I share things on those meetings."*
>
> (Interview, S7T1)

4.3.4 Sharing practices

Teachers value the space and time to share their practice with other educators. Sharing of practice allows them to learn about the teaching approaches of their peers, get feedback on their own techniques and also to sound out new ideas to a knowledgeable audience. The most

prevalent means by which teachers shared their practice were TeachMeets, informal gatherings of educators for the purpose of sharing practice, and local subject networks. One participant also noted their use of open educational resources, so that other teachers could freely make use of their teaching resources.

> *"I think just the sharing of good practice in that someone might have used something and think that it might not be very good for somebody else but for me, for P.E., I took quite a few of [C]'s ideas where it wasn't intentionally for P.E. I've been able to still use it in P.E. So it's knowing what's about."*
>
> (Focus group, S5T6)

4.3.5 Sharing lots of ideas

During reflection on the data analysis it was noted that there appeared to be two preferences for CPD activity. Firstly, the showcase approach, where lots of ideas are shared with the intention to give a brief introduction to the many possibilities available to educators. Secondly, the deep approach, where a session focuses on one new practice and the teacher is given ample time and support to learn in greater detail how to teach effectively using the practice. Teachers found the showcase approach valuable as it raised their awareness of new teaching tools and techniques and gave them the initial inspiration needed to go off and learn more on their own.

> *"I think something like wandering around [conference] is fantastic CPD because you're just bombarded with lots of interesting things and ideas... Going to something like that I think is probably, there's lots of different things going on there's a whole range of different sit down discussions, presentations which you can dip in and out of."*
>
> (Interview, S7T1)

4.3.6 Opportunity to embed

It was highlighted in 4.1.11 *Inability to embed* that when teachers are not given the opportunity to make use of CPD soon after learning, it is unlikely that it will be implemented. Under this category, however, participants provided examples of CPD where they had been supported, during the session, in embedding their learning into their teaching practice. This was often in a simple way, such as setting up accounts and creating a practice resource, but it is enough to give teachers the impetus needed to then implement new technologies in the classroom.

> *"Oh yeah, it was good that the outcome managed to actually do something positive - I could embed some stuff. I don't, it depends how far back you go, but it makes you wonder if I didn't, if I hadn't got that, would I have done all the stuff that I've done since?"*
>
> (Interview, S3T1)

4.3.7 Having evidence of success

As noted in 4.3.4, *Needing facilitator to be knowledgeable*, it is important for teachers that they are able to see how a practice or device will work in their classroom. Furthermore, teachers value examples of effective practice, evidence that a new technique can work for them. This also links to 4.3.4 in that proof of success with a new practice gives the teacher greater confidence in the practice itself and in the session facilitator.

> *"...when you can see other people have already used it and they can show you and pass it on I think and then having a go at it as well really is helpful."*
>
> (Focus group, S5T10)

4.3.8 Duration

Whilst they may sound as though they are representing the same idea, the labels of *time* and *duration*, have been chosen as distinct groupings due to the nature of their use within the data. Whilst discussions of time were always in relation to a need for time, the excerpts described here are where participants spoke about the length of time they spent on CPD. In keeping with the predominant literature (Cordingley, *et al.* 2015) on this topic, the data suggest that teachers prefer CPD that runs for longer than one hour.

> *"I've been on one or two of these - so you stay in the halls of residence and then they have like all-day sessions and then, you know, you get given pieces of equipment and stuff you can use over the night and then you go back and report on it."*
>
> (Interview, S3T1)

4.4 Learning needs

In order for PD to be successful, there are certain learning needs that must be met. The focus groups and interviews identified a number of elements of CPD that participants perceived as missing from their experiences, which were thought to be key to successful professional learning. Within this category, two sub-categories reside: relevance and time. These were included as sub-categories as they are distinct enough themes within the codes to be merged into a larger category, but they do not standalone, instead they make up significant elements of the wider learning needs category.

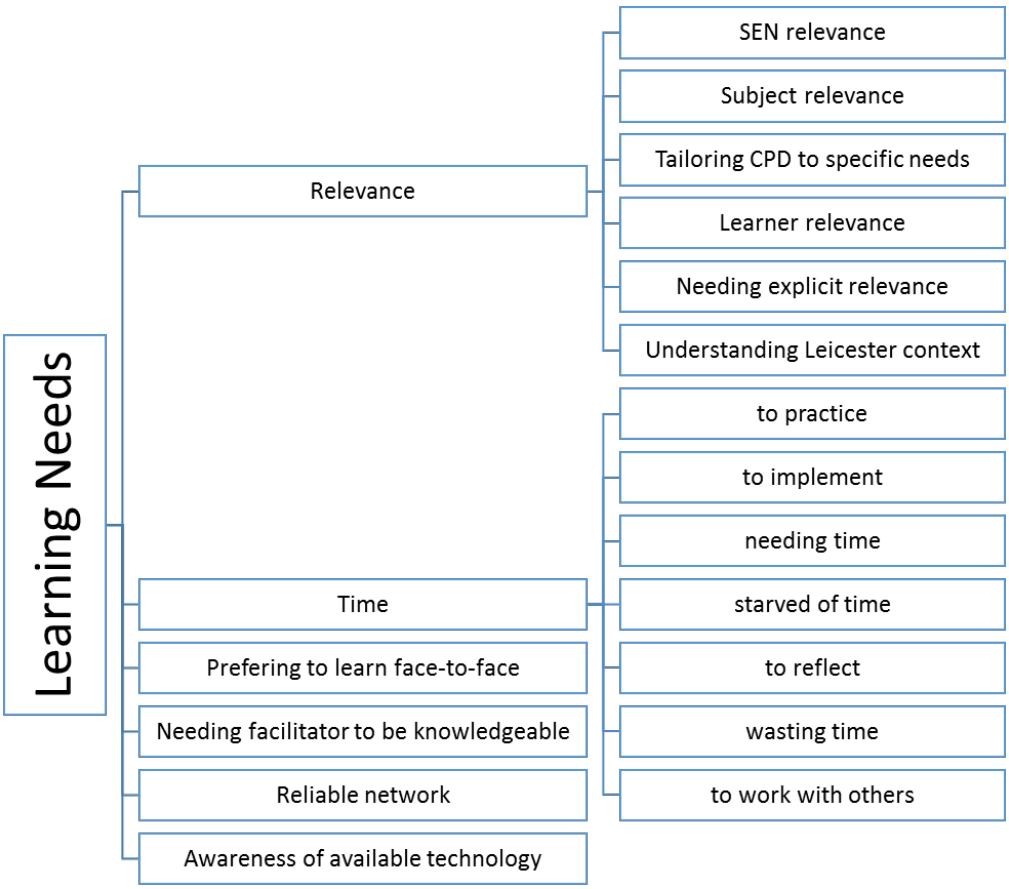


Figure 4.4 Learning needs concept map

4.4.1 Relevance

The most frequent of these was the need for CPD to be explicitly relevant to the teacher. Relevance was discussed in relation to subject relevance, learner relevance and being appropriate for the teacher at that point in relation to their specific needs. A key concern for those participants working in SEN schools was the lack of age appropriate CPD and support. As the quote below demonstrates, too often SEN schools would receive CPD aimed at primary school teachers, even though their learners were 16+. Whilst they might be accessing the curriculum at a lower age level, these students are still teenagers, and the support and resources given to their teachers needs to be appropriate to their interests.

> *"T18: ...a lot of the things that I potentially would want to use you go into them and they are either very primary based or far too complex.*
>
> *T1: All of the things we buy into are Primary...*
>
> *T17: But then you've got the primary themes rather than looking into things that are, you know, for learners who are 16 to 19.*
>
> *T18: We need stuff that's at their ability level, but they're age appropriate."*
>
> (Focus group, S5T18)

Participants noted that CPD in relation to the use of technology was often focused upon the basic functionality of the software or hardware itself, and not on how it might be applied within an individual's teaching practice. Furthermore, as noted in the excerpt below, some participants felt that even when CPD had a subject focus, it tended to be for the STEM subjects, rather than the humanities. This is backed up by the existing literature, where a lack of literature focusing on DL practices of humanities subject specialists was noted.

> *"I don't think I've ever had a specific CPD training for ICT, for using ICT within my subject, so any sort of different ways of doing lessons - you know like you've just said [L2] that sounded amazing because it's all focused on the learning not the hardware."*
>
> (Focus group, S2T4)

4.4.2 Time

The importance of time appeared frequently throughout the data collection, with teachers noting in particular the need for time to practice with new technologies, to implement new practices, to collaborate with others and to reflect. I considered including this theme within 4.1 *Barriers to CPD,* however, upon reviewing the context in which time was discussed I realised that participants spoke of a need for time more often than a lack of time. Though it is important to note the relationship between the two, as the need for time must come from a lack of it.

> *"I think the time, so if you are shown new software of something like that you need the time to have a play around with it so you can actually put it into your practice."*
>
> (Focus group, S1T11)

> *"A lot of training, they tell you about things, you know, and then you leave the session and you don't actually have any time available to fill out the evaluation form let alone go away and develop something with it."*
>
> (Interview, S7T1)

4.4.3 Preferring to learn face-to-face

It is felt that by working with a trainer face-to-face, an individual is able to get the personalised support that they need, in a timely fashion. When learning via online courses or self-led browsing, the opportunity to access specific support and guidance is reduced. The immediacy of support gained through face-to-face CPD can also be hard to replicate in online environments, as synchronous communication may not always be an option. In this instance, the individual is then unable to gain timely support, which may be needed for their next lesson, and must adjust their teaching accordingly. As has been demonstrated in the previous findings, this can often result in teachers avoiding digitally literate practices.

> *"I prefer to be talking to somebody about something face-to-face, I prefer face-to-face training because it allows me to, you there's interactivity and there's the contact and the rest that comes with it."*
>
> (Focus group, S1T12)

4.4.4 Needing facilitator to be knowledgeable

During the analysis process, it was identified that teachers had a particular preference for who delivered their CPD experiences. Teachers were particularly wary of external 'experts' who did not have a background in education, and therefore had not implemented the device or practice in question into their own work. This realisation is linked strongly with 4.3.1 *relevance*, as part of the issue here is around the relevance of the learning experience and the extent to which the facilitator is able to make the learning relevant to teacher needs. This issue stems from the facilitator's knowledge of both the device or practice they are teaching, and also of the wider educational context in which it will be applied. One does not necessarily need to be a teacher to be able to facilitate teachers' learning effectively, but one must have a sound knowledge of how digitally literate practices work in the classroom.

> *"If you are bringing someone in from the outside or if you are going out on CPD that person must be an expert you must have confidence that they know what they are talking about and they are your go-to person if you need anything so that you can become the go-to person for others."*
>
> (Focus group, S6T1)

4.4.5 Needing follow-up CPD

It was noted in 4.1.11 *inability to embed*, that when DL CPD has been delivered and is not implemented shortly afterwards, teachers often forget how to use the device, service, app that they learnt about. Whilst it is not always possible to control the factors that will decide if CPD is embedded quickly into teaching practices, follow-up training sessions can be provided to support teachers in refreshing their memory and skills, so that they may still make use the CPD.

> "and then, because a lot of time has elapsed since then, I've just, you kind of almost forget how that app was supposed to work – it's almost like I need a refresher, again in terms of that chance to sort of sit and play with other people because..."
>
> (Focus group, S1T3)

4.4.6 Awareness of available technology

Having recently been through the BSF programme, some participants noted that they were not aware of all the new technologies available to them or the full functionality of those technologies. These individuals felt that in order to develop their digitally literate practice, they would need to understand more about the possibilities of the devices and services already at their disposal. This was seen as an effective way to move current classroom practice forward, without the need for further purchases, and would also boost the confidence of staff as their knowledge of the technologies around them increased.

> *"I think being able to know and recognise the potential of the technology that we've got."*
>
> (Focus group, S1T1)

4.5 Support systems

When a teacher plans to embark upon new practices, they often turn to others for support and guidance at some stage of their learning. Throughout the focus groups and interviews, participants made reference to the systems of support that they relied upon. This category also includes those instances in which participants discussed supporting colleagues in their CPD. It was included here as it is viewed as one of a number of support systems present within the school. It is also reflective of the reciprocal nature of collegial practices.

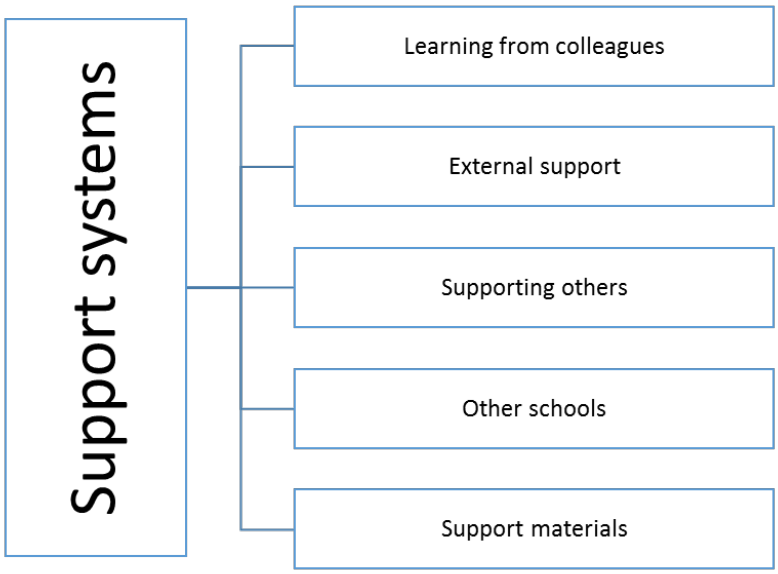


Figure 4.5 Support systems concept map

4.5.1 Learning from colleagues

Perhaps unsurprisingly, as they are the most accessible, teachers spoke most often of turning to their colleagues for support. This was often informal support, in the form of an individual seeking advice and tips from another. As noted in the excerpt below, staff were often aware of confident colleagues on whom they could rely for quality guidance. The prevalence of peer support within schools is likely linked to 4.4.2 *utilising internal expertise* and 4.3.1 *relevance*, in that teachers feel that by learning from another teacher who works within the same context as them, the guidance they get will be more relevant and appropriate to their specific needs.

> *"Because people are quite well recognised in the school for being particularly good at certain things and I think that encourages respect amongst colleagues as well in terms of that professional learning."*
>
> (Focus group, S6T3)

4.5.2 External support

Where internal support cannot be accessed, for example when learning about a tool which is new to the school, external support is required. The school may have someone visit to deliver CPD, or individual members of staff may be sent out of the school for CPD. External support encompasses all organisations outside of Secondary-level, compulsory education, such as:

further education institutions, higher education institutions, educational consultants and software companies and commercial companies. These were all noted as potential sources of CPD by participants.

> *"We've got a company that we work with it's called [company] I work really closely with them, they provide you with loads of resources and loads of different apps."*
>
> (Focus group, S4T1)

Interestingly, the member checking exercise for the study provided an opportunity to capture further data in relation to this particular theme. Since the time of data collection, one of the schools involved in this study has begun to trial virtual reality in the classroom. As part of the implementation they engaged with Google Expeditions and were also provided CPD from the company where they purchased their virtual reality headsets. Through personal correspondence between the participant and researcher, it was found that the company used trainers who previously worked within education so that they were easily able to link the technology to teaching and learning practices.

> *"My experience in this area has only been underlined of late, having experienced the benefit of quality input from providers such as 'Google Expeditions', who visit schools, free of charge, to showcase new technologies such as VR in the classroom."*
>
> *(Member checking survey, Appendix G/i)*

4.5.3 Supporting others

Participants also discussed the ways in which they offered support to others, showing that in these schools CPD is a collegial effort. Most often, twelve of the nineteen references, those supporting others were from mainstream schools. It is important to note that the majority of staff (four out of five) participating from mainstream schools had a specific role for facilitating CPD or DL in their school, and the fifth, though not in an official support role, worked actively to contribute to the CPD of the school. This support is most often given through the delivery of CPD sessions, or organisation of wider CPD projects across their prospective schools.

> *"What we try to do as a team like for the ICT when the new stuff does come in is kind of, if we know it, then we can cascade it out to the rest of the team either that or it's a case of learning it and then again giving it out to everybody to use and stuff like that it depends on what it is."*
>
> (Focus group, S4T1)

4.5.5 Other schools

Just as teachers value the advice of other teachers within their school, they also acknowledge the support that can be gained from other local schools. The excerpt below illustrates how, similarly to 4.5.1 *learning from colleagues* and 4.4.2 *utilising internal expertise,* there is an appreciation of the ability of those from the local area to understand the geographical context of their learners. Support from other schools was often accessed via showcase style events, where teachers from a variety of schools would come together to share practice or by bringing in staff from other schools to deliver CPD.

"But then like for example last year we borrowed a member of staff from [local school] because we knew that they were experts in lesson study so we knew that it would go down well if members of staff knew but they'd come from another school within the city - not the same context necessarily but another City school closer in terms of location."

(Focus group, S6T1)

4.5.6 Support materials

The final theme within the support systems category is that of support materials, resources created within the school specifically to support CPD. Within this study, these materials took the form of bulletins, designed to share the benefits of CPD widely across the school. In school 6, as shown below, the bulletin was created in order to share staff evaluation of CPD experiences and to help other staff in identifying the experts within the school, in different areas of CPD.

"T3: And you do a [professional development] bulletin, don't you, every month.

T1: Yeah just to share with people what's, just three every month, to see what's going on, some of that. I'd like to do more than 3 to be honest but not everyone necessarily evaluates in the same way, they don't necessarily see the value of that when there's priority jobs to do instead that doesn't always work.

T3: But the learning matters is literally a mugshot of the person who went on the training and a brief synopsis of the impact it had on them."

(Focus group, S6)

4.6 Use of Web 2.0

Participants highlighted a number of online tools that they used for support their PD. Twitter was the most common tool, used primarily for networking and finding resources and ideas. Forums were also used to locate resources and share practice. A number of individuals used blogs to share and reflect on their teaching practice. Online courses were often used for statutory training (such as safeguarding, equality and diversity) as well as more self-directed learning opportunities. School VLEs were also identified as a source of PD resources.

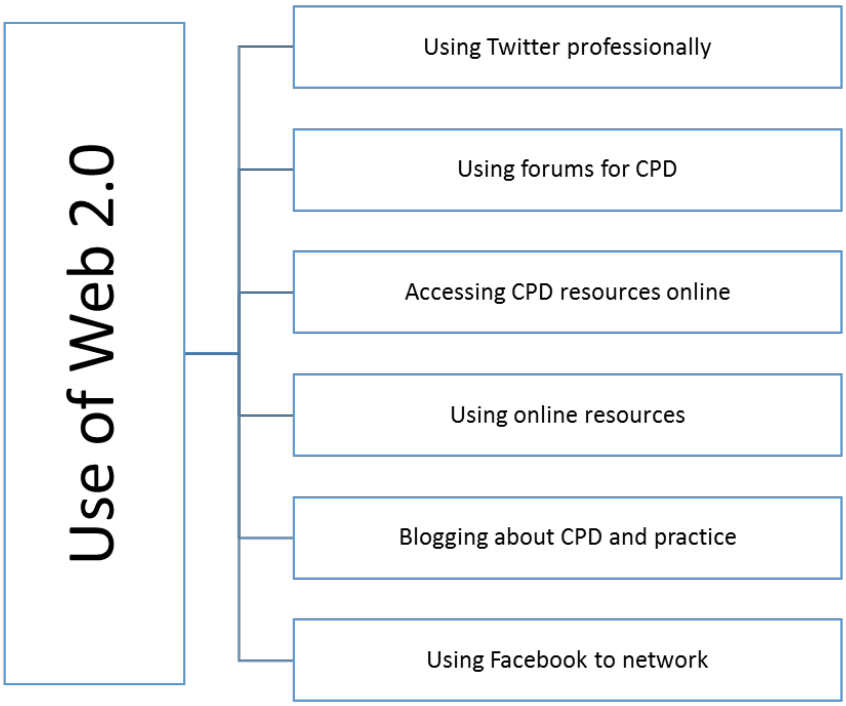


Figure 4.6 Use of Web 2.0 concept map

4.6.1 Using Twitter professionally

Twitter is used in two primary ways. Firstly, teachers use Twitter to follow other educators and specialists within their subject or provision. In this way they are alerted to new teaching ideas, approaches and services that come to them from a trusted recommendation. Secondly, some teachers share their own practice via Twitter. Examples from this sample include, sharing blog posts they have written and engaging with school-wide strategies for sharing CPD practices across the school. One participant in particular noted the potential longevity of Twitter as a professional networking tool, stating that no other online platform works in such a way as to support CPD like Twitter can.

> *"Twitter I use quite a lot, I follow [local teacher] he's fab and I talk to him quite a lot. Yeah so I pinch ideas off Twitter and then try to share it around."*
>
> (Interview, S3T1)

4.6.2 Using forums for CPD

The use of forums for CPD focuses largely on accessing communities with specialisms, for example SEN practitioners, other teachers who use the assessment for learning approach and technical forums. Forums are primarily used to locate answers to participants' questions and to find suitable resources for their classrooms. The Times Educational Supplement forums were also mentioned frequently by participants as a key source of CPD information and advice.

> *"I do the SLD [severe learning difficulties] forum, I make contributions as well as follow other people."*
>
> (Focus group, S5T13)

4.6.3 Accessing CPD resources online

Websites were used to collect CPD resources and access information and training. The sites used were often subject focused, exam boards or the training sites of leading technology companies. By accessing subject-focused CPD resources from their source, staff were confident of their relevance to their teaching. It was noted, however, that the amount of possible CPD resources available online could be very overwhelming, and could sometimes result in an individual taking the easiest resource to locate, rather than what they actually need.

> *"I tend to use trade or professional websites or blogs and forums like [online peer support community] and things like that I go to those quite a lot... and then you know just going to all the [technology company], there's loads of stuff on [technology company], you know, training stuff, help pages, that kind of thing."*
>
> (Interview, S7T1)

4.6.4 Using online courses

The majority of online courses accessed by the participants were for statutory training, such as safeguarding, equality and diversity, and food hygiene courses. These were accessed online as it was seen as more convenient than physically attending courses. It is also more cost effective from the schools' point of view, for staff to complete training online over the lunch break or in their own time, than to organise cover and send them out for a course. Some other examples, however, were not mandatory courses, but rather opportunities identified by participants, such as the one shown below. Through the member checking survey it was also noted that a number of free online courses (massively open online courses) available from Universities are now becoming available with a teaching focus.

> *"I liked the, erm, when I used to work at [federation school], we did hinge-point questioning and it was over a few weeks and there were like conferences, weren't there, and everybody had to be online at the same time for like online discussions and stuff."*
>
> (Focus group, S2T3)

4.6.5 Blogging about CPD and practice

Two individuals, from different schools, spoke of blogging as part of their CPD practice. They used their blogs to document their practice, both teaching and PD, and to disseminate it for the benefit of other teachers. As noted below, this use of blogging has created opportunities for those individuals to reflect on their CPD experiences and to revisit past training that they may not have been in a position to implement at the time, but can now put into practice.

> *"I found it useful a year or so after to go back and go 'I'm sure she said something like that' and I looked back and went 'yeah that was really' it's like a diary isn't it? But you forget how useful bits are because you're not ready for that yet and then later on you feel like you are ready for it and you can go back and go 'yeah'."*
>
> (Interview, S3T1)

4.6.6 Using Facebook to network

Whilst Facebook was noted by some as less of a professional network than other forms of social media, it was acknowledged by some as a valuable space in which they could access their wider professional counterparts. Where Facebook was used professionally, it was through engagement with practitioner networks, online communities of teachers who specialise in a particular subject or provision.

> *" ...[teaching specialism] practitioners on Facebook..."*
>
> (Focus group, S5T13)

> *" ...I've set up Facebook groups."*
>
> (Interview, S3T1)

4.7 CPD Strategies

A number of PD strategies employed by the schools were discussed in the focus groups and interviews. As with 4.5.3 *supporting others*, this was most often by those responsible for supporting the PD of colleagues. Whilst not a school-wide strategy, self-directed learning has also been included under this category as it is an approach employed frequently by the participants.

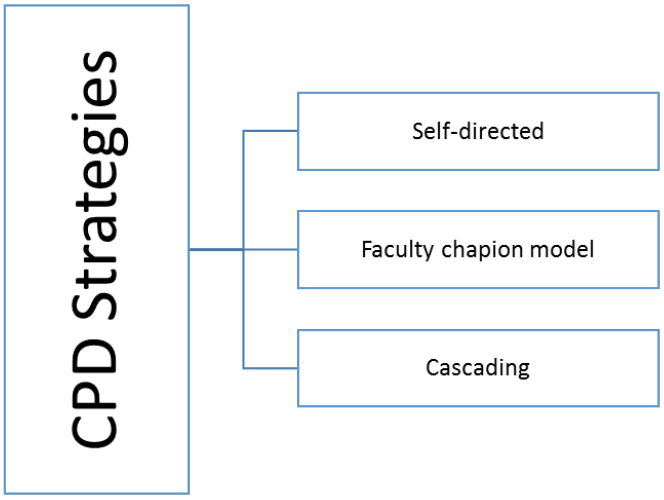


Figure 4.7 CPD strategies concept map

4.7.1 Self-directed

Participants often found that they developed their DL in the classroom, as part of their daily working lives. By having to engage with an increasing amount of technology within their practice, they were learning how best to utilise these resources on the job. This label was also chosen to represent the CPD that was engaged with out of the teachers' personal interest, rather than a session that had been organised or chosen by senior leadership. Here teachers have actively searched out CPD opportunities to respond to a gap in knowledge that they have self-identified.

"I'd say mine, in terms of using it for teaching, is having picked it up myself as I've gone along."

(Focus group, S5T14)

"And those of us, going on what [G] was saying, that do know their way around a piece of technology will almost self-teach themselves. Because they'll go 'oh I've got this I could use, that might be good for this, let's go and investigate'."

(Focus group, S1T2)

4.7.2 Faculty champion model

Faculty champions appear to be a popular system in half of the participating schools; where individuals in each faculty take on the responsibility of encouraging and supporting CPD in a given area (in this case DL) within their faculty. This approach utilises faculty expertise and supports individual teachers in having access to CPD from someone within their own subject area. There are clear links here, again, to 4.5.1 *learning from colleagues*, 4.4.2 *utilising internal expertise,* and 4.3.1 *relevance*. The faculty champion model is seen as successful because it provides staff with guidance from someone not only in their school, but also within their subject specialism, meaning the highest possible relevance to their own application needs.

" ...one person from each Faculty - who's kind of taking the lead on using bring your own device, use iPads and sharing best practice within their Faculty as opposed to just me saying do this, do this, do this."

(Focus group, S6T2)

4.7.3 Cascading

The cascade model, where a small group or an individual receives CPD and then share it among the school where it can be spread further is also a current approach being used. Whilst the champion model relies on specific individuals to support CPD across the school, cascades can be initiated by any member of staff. This model is cost effective and again relies on internal support systems. In the main example of this from the study, a core technical team took responsibility for receiving all CPD so that they could then present the new approach, device or service, to the rest of their colleagues in a way that directly relevant to their teaching practice. Clear links are present again here to 4.5.1, 4.4.2 and 4.3.1; the cascade model allows for personalised CPD delivery to the main teaching body.

"Technology is so broad you know. It's all sorted, streamlined, it's all cherry picked - what will be good for us to use. It would just be a waste of time if you told us about stuff that we'll never use."

(Focus group, S4T5)

4.8 Observation findings

Following the collection and review of the observations as explained in 3.3.2.3, *observations*, the findings will be presented as summaries of the data collection experience, the context of the observation, and the data collection activities, the content of the observation. The full observation schedules can be found in Appendix F.

4.9.1 Observation 1

The first observation was held at the end of a staff meeting, which all staff had attended. The technology being taught in the session, was a software package purchased by the school to support staff in providing evidence when tracking pupil progress. The session was led by a sales representative from the company behind the software. Due to some technical issues, the initial staff meeting space could not be used for the training session and so it was taken into the school cafeteria space where a screen was found that could be used to stream the presenter's laptop and tablet computers. In the move from the staff communal space to the cafeteria, a large proportion of staff left to pursue other responsibilities, leaving only 10 members of staff remaining in the training. During the session a number of people walked through the cafeteria, including a group of pupils who attempted to disrupt the training.

As shown in the observation schedule (see Appendix F/i), four of the seven categories within the data were also present during the observation: *barriers to CPD, positive elements*, *learning needs*, and *support.* Technical issues resulted in a delay to the start of the CPD session, as well as continuing issues throughout. The early technical difficulties prompted a change of venue, during which time a large percentage of the original cohort left to pursue other duties. Once settled into the new venue, staff also requested that the session run as quickly as possible, due to their need to complete other work before finishing for the day. The final barrier encountered was the lack of online tutorials available to staff for support at the time, though these were in progress.

The session met a number of *positive elements of CPD,* though these were not always intentional. The facilitator highlighted that staff could engage with the application during the session on their personal devices, attempting to engage them in some active learning. Very few staff actually had a go at this, however, so for most the session was a passive experience. Some collaboration occurred, in the form of individuals supporting their colleagues in understanding the processes within the application. Again, this was not through the design or delivery of the CPD, but rather due to some members of staff not following the information being presented. One anecdotal example of success with the application from other educators was presented, detailing the use of the application to encourage reflective learning in students.

No pedagogic or subject specific examples were given for how the application could be used, and no links were made to the provision of the school and how the application might work for them. The facilitator did offer to return to the school to provide follow up support if required, and also left leaflets detailing a walkthrough of the main function of the application. In this way, some support systems were in place for staff to engage with should they require further guidance. In spite of the overall poor experience of CPD, staff were able to see the value of the application itself, and were hopeful that they could access the support they needed internally or through the application website to support them in making effective use of it.

4.9.2 Observation 2

The second observation was conducted via a video recording of the original session, due to the researcher's inability to attend the session in person. Whilst this meant that the researcher was unable to observe the session live, the staff are used to sessions being recorded for other faculty members and so may have been more comfortable this way, and acted more naturally. Additionally, as the researcher watched the recording back with the school lead for digital learning, they were able to gain more insight and ask questions about the meeting. These helped to clarify the activities within the session and learn more about what could not be captured by the meeting. The session was held over a lunch break and involved representatives from each department within the school, each responsible for sharing educational technology practice across their subject area. The school's leader for digital learning lead the session, with each representative providing an update of digital practice across their subjects. The focus of these particular meetings is on the sharing of practice, so that other faculties might be able to use the ideas in their own teaching.

As shown in the observation schedule (see Appendix F/ii), five of the seven categories within the data were also present during the observation: *positive elements*, *learning needs*, *support*, *web 2.0* and CPD *strategies*. The school employs a digital champion model, ensuring that someone within each faculty is confident in their digital skills to the point that they can support their colleagues

The meetings are centred around sharing best practice across faculties. They make use of internal expertise by encouraging individuals from each faculty to take on the responsibility of modelling good practice to their colleagues and acting a source of guidance. As staff shared examples of their ongoing practice, they are able to provide their colleagues with evidence of success in the classroom. Finally, depending on the focus of the term, the meetings often involve active learning in the form of walkthroughs and demonstrations of tools to support learning.

Relevance was the most prevalent learning need identified by the participants and it can be seen that the digital champion model employed by the school increases the likelihood of CPD being relevant to individual staff needs, as most teachers will receive their digital CPD from a colleague within their own faculty. The meetings are always face-to-face but are also recorded for staff to access at a later date if they wish to revisit a session. Additionally, hashtags and Twitter accounts are used across the school to promote CPD and digital practices. Most departments have their own twitter account and many also curate a subject blog where they can share their practice. The hashtag helps staff to identify the pockets of practice occurring across the school and also the lead teacher in digital learning to monitor staff progress and identify areas where further support can be provided.

4.9 Chapter Summary

In this chapter the findings of the research have been presented, focusing on those categories most prominent within the data. Key themes arising from the data paint a picture in which teachers are aware of the potential benefit of digital practices, but are constrained by their

existing responsibilities. Even when a teacher is engaged and inspired during a CPD session, they may not then have access to the support and resources necessary to turn that initial spark of interest into a change in practice.

The teachers within this study faced significant issues with classroom technologies and school networks, which resulted in a lack of trust in implementing digital practices. Where technologies could not be relied upon to perform consistently, teachers would turn to more traditional, often analogue, methods that were viewed as less likely to cause disruption to the lesson. Many received inadequate CPD to support their development of digital practices and this, teamed with a lack of support and guidance for translating DL into the classroom, has resulted in teachers lacking the confidence to take a risk on new digital approaches.

Whilst high-level guidance has been lacking, teachers have turned to one another for support. The data suggests that the vast majority of DL CPD is currently received ad hoc; on the job support from colleagues in response to issues faced during everyday teaching. Whilst this may be out of necessity, it does limit teachers to only having the support immediately available within their school community. This also puts a significant burden on the more digitally literate teachers within a school, particularly where a majority of staff are not confident in their use of technology, to be available to support their peers.

Alongside the primary theme from the data, was a secondary strand regarding teachers' views of professionalism. The teachers in this study highlighted an element of the role not found within the existing literature. The notion of adaptability and responding to change was a key concept within the teachers' discussions of their professionalism. Considering the focus on digital practices within this thesis, it could be that the wider topic influenced their perspectives. Similarly, the impact of three Secretaries of State for Education in the last two years alone could be the cause of teachers' focus on this particular characteristic.

In the following chapter the primary theory that has emerged from the findings will be explored in more detail. The secondary theme falls outside of the current scope of the research, though may be explored further in future papers. As noted in 1.1, *Aims*, teachers' perceptions of professionalism were included in the study in order to provide a more holistic picture of PD, to understand what it was that was being developed. The aim of the study was not to present on professionalism independently of the wider context of teachers' DL CPD.

5. Teachers' Digital Literacy Development

Having presented the prominent themes from the findings, this chapter will now outline the prevailing theory that has emerged from the data. This has arisen in accordance with the constructivist grounded theory methodology, as outlined in chapter 3. This will be followed by the introduction of a framework that will be used to explore the findings in more detail. The framework is presented here, following the findings chapter, to authentically portray the process of the research. As guided by the four-stage model of theory development (Idrees *et al*. 2011), the primary literature review took place during the initial phase of the research, the uncertainty stage. The framework identified here arose from the return to the literature in the final phase of the research, the maturity stage.

5.1 Emerging theory

Teachers are working in a climate of increasing accountability and performativity (Solomon and Lewin 2016, Ball 2013). In practice, this has translated to an increase in non-teaching workloads, specifically around marking, planning and data management (DfE 2018). In response to inspections and league tables, teachers feel under pressure to perform to externally determined standards, often working an average of 12 hours unpaid overtime a week – the second highest of all professions in the country (Trades Union Congress 2017). The data from this study shows that this increase in workload has also resulted in teachers having to focus what little time they do have available to the tasks noted above: marking, planning and data management. This directly impacts on teachers' CPD, as they are unable to devote sufficient time to their own development. Even those teachers with an interest in digital practices noted a struggle for time.

This research also highlighted concerns over the support available to teachers when translating DL into classroom practice. Many teachers only had access to part-time technicians, which restricted the times during which they felt comfortable experimenting with new practices. Where access was available, some staff noted that technicians did not have the pedagogic knowledge necessary to support digitally literate practices. Since national guidance around educational technology is also lacking since the abolition of BECTA in 2012, as noted in 2.2.3 *professional development in the UK*, many teachers do not feel suitably prepared for supporting their students.

Within this context, teachers do not have the luxury of time and support to enhance their DL PD. Due to this they are becoming necessarily discerning about the CPD they engage with and the directions in which they seek to develop their practice. Specifically, they focus their engagement on CPD that will support their current teaching and meet the needs of their students. DL, and ICT CPD more widely, are not promoted as valuable practices within all schools and so some staff can struggle to see the point of adding extra work to their schedule. This is exacerbated by the heavy initial investment demanded by some devices and software. Despite the long-term value, the short-term cost in workload is perceived as too steep a price to pay. There are also further complications where the translation of DL into classroom practice comes into play.

The teachers within this study highlighted a number of concerns that they take into account when making decisions about their engagement with DL PD. These can be grouped into four main spheres of concern in relation to their engagement with DL CPD and practices:

1. personal ability - their conceptions relating to their own skills;
2. teaching context - their understanding of their teaching needs;
3. support systems - the support networks and equipment at their disposal; and,
4. school culture - the influences of their wider school setting.

Figure 5.1 - Spheres of concern: personal ability and teaching context

The former two spheres, personal ability and teaching context, represent the individual's primary concerns, as shown in figure 5.1. Teachers demonstrated throughout the focus groups and interviews that they were mostly interested in ensuring that new practices and tools were relevant to their current teaching needs, subject area and student needs. When engaging with CPD, the relevance of a new tool or practice is often at the forefront of the teachers' mind and this will impact upon their engagement and future development. Consideration of teaching needs was coupled with a consideration of their own perceived skill and ability to utilise the new practice or tool effectively. Both of these appeared to hold equal sway on a teachers' intentions to use a new practice, and were often viewed as interlinked. For example, a teacher would not just consider if they were able to learn a new piece of software, but if they were able to learn it within the time constraints of their current workload. In this way the two spheres of personal ability and teaching context, whilst distinct, act in relation to one another.

Figure 5.2 Spheres of concern: support systems

The third sphere, support systems, relates to the systems in place within the school that support a teacher in their practice: technical support, CPD, informal learning and access to learning technologies. The teachers' main concerns within this sphere were related to the availability of local support and the quality of external guidance. Teachers' noted that they liked to have the security of a colleague or technician nearby when trying out a new practice, so that assistance could be sought should they encounter any issues. In this way, support systems can act as both a facilitator and a barrier to teachers' PD. When good support is available it facilitates a teachers' DL development, when support is unavailable it is a crucial barrier to this process.

Memo 5.1 040417-2

The data suggests that in order of preference, teachers would prefer to learn from an internal expert - someone within their own specific school context who can teach them how to use a new tool or practice. After this they would rely on an external specialist, but another teacher, preferably someone who understands the local educational context and is able to support the learning of the new tool or practise within an education context. Teachers do not appreciate support and guidance from "expert" trainers who do not understand an education or classroom-based context. Often teachers do not feel that their training and support can be valued in the same way as it would from another educator as they do not believe that those trainers are in a position to be able to support them effectively.

Teachers wanted the reassurance that a new digital practice would be effective in their specific teaching context, and they viewed other teachers as the most reliable way to gain this

information. As noted above in memo 5.1, it was felt that only another teacher could provide the support necessary to ensure the success of a new digital practice in the classroom. This assertion is reinforced by educational theory, which identifies the importance of situated learning, learning that takes place within the intended context of use, and of learning from the observation and imitation of models (Lave and Wenger 1991, Bandura 1971).

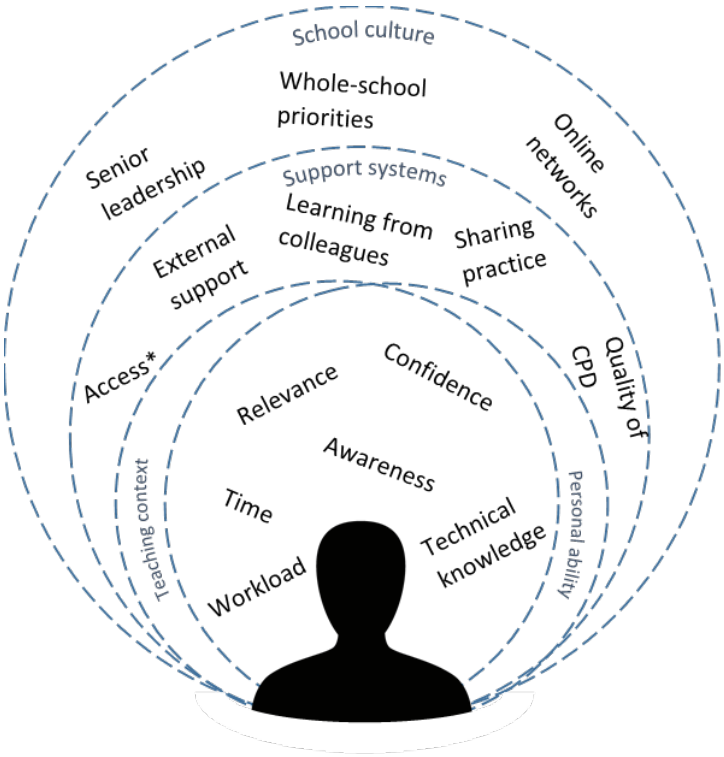


Figure 5.3 - Spheres of concern, with content

The fourth sphere, school culture, encapsulates the wider social influences of the teachers' professional life. This primarily includes the role of senior leadership and colleagues, but can also be extended to include wider social networks, such as subject associations and online communities. The different professional groups within which a teacher socialises have an impact upon their views of the value of new digitally-literate practices and CPD. The participants noted how the opinions and practices of colleagues and senior leadership influenced their view of DL CPD. Even when influence was not directly discussed, participants still demonstrated a clear understanding of their schools' position on DL, and whether or not it was deemed a priority.

A number of teachers clearly did not share the views of their SLT, often where they believed that DL was an important skill to develop and perceived their SLT as prioritising this. Interestingly, these tended to be the teachers who also felt less valued by their school and less a part of the community than teachers in other schools felt. Where a strong sense of community existed, there was little to no resistance from staff in relation to the views of their SLT. This demonstrates the importance of the connection between an individual and their

school, and the strong influence that a school culture can have on an individual's perceptions of priority in relation to CPD.

The value of relevance of CPD to teachers, particularly in relation to digitally literate practices, is crucial given the abundance of decontextualised, passive CPD found in the research literature (Opfer and Pedder 2010b). Also in light of the prominence of ICT CPD that focuses on functional skills and ability, rather than pedagogic use (Lankshear 1997). This demonstrates a critical gap between CPD provision and teacher's learning needs. Whilst generic CPD may be justifiable from a financial standpoint, as it is more cost effective to run a CPD session for all staff together than in separate disciplines, this approaches inefficiency to support lasting changes in the classroom suggests that investments in more personalised CPD opportunities for schools would be of greater benefit to teachers and learners alike. It would also translate into greater value for money over time as learning technologies would be used more frequently and effectively.

What can be seen from the data is that within their current working conditions, teachers prioritise CPD with guaranteed impact and clear application. They focus their efforts on CPD that responds to immediate needs, addresses statutory requirements or links to whole-school priorities, such as assessment. Whilst not the case for all, digital teaching practices fall outside of these categories for many teachers as they are not a necessity for effective teaching, just a way to potentially enhance it. In this way, learning technologies can be seen as an additional burden on an already overwhelming workload. What needs to be considered then, is how teachers' digital practices can be developed, without placing all of the onus on the teachers themselves. How can teachers be supported in developing their DL more effectively? In this way, learners can benefit but teachers are not overburdened.

As digital practices are not required for good teaching, the issue of teachers' DL may not appear to be a critical concern. Certainly, this is only perceived as a problem by the Government because they view DL as crucial to economic competition and success. To the author, however, DL is more than just another skill for teachers to master, another role to perform. To the author, DL is important because it has the ability to support teachers in all areas of their working lives. Digital literacy is the foundation upon which other, more specialised, forms of educational technology knowledge can be built. If a teacher is confident in their capability to use technology creatively and critically they will be able to apply digitally literate practices to a range of situations to enhance their teaching. Or, as a participant expressed it:

'*Becoming, not technicians, but our own problem solvers*'
(Focus group, S1T1)

Effective CPD is key to the successful development of teachers' DL. Be it through formal sessions, or guidance from a colleague. The purpose of this CPD 'is not to indoctrinate or train teachers to behave in prescribed ways, but to educate teachers to reason soundly about their teaching as well as to perform skilfully' (Shulman 1987, p.13). In order to consider how teachers might be supported more effectively in their DL development, we must consider not only what makes

effective CPD but also what influences a teachers' engagement with CPD and their subsequent use of learning technologies. The four spheres of concern, as highlighted through the data from this study (see figure 5.4), will be used to identify a framework through which these influences can be explored in more detail.

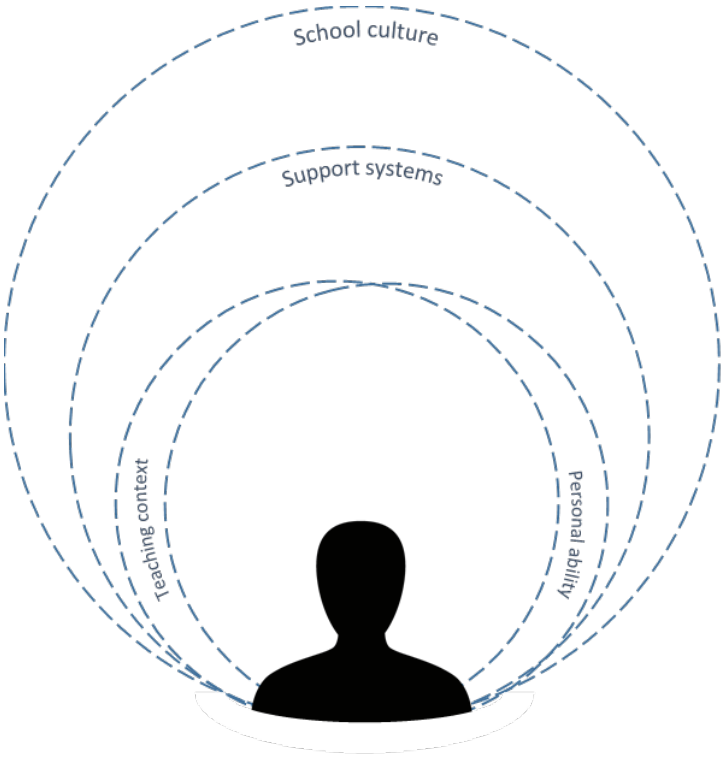


Figure 5.4 Spheres of concern

5.2 Considering how teachers engage with digital literacy and CPD

Since as early as the 1980s, models and theories surrounding the integration and acceptance of technologies have emerged (Legris *et al*. 2003). These models have arisen from multiple areas, including education, though primarily from the information systems research field. This work was driven by concerns that despite the introduction of new technologies into business and enterprise, technology was still underutilised (Davis *et al*. 1989). This also reflects the picture within the field of education, where the transformative effects of learning technologies have long been proclaimed, with little wide-spread evidence of success to date (Mishra and Koehler 2006, Teo *et al*. 2007). The models and theories that have arisen from this seek to identify the essential knowledge and conditions in which technology integration is successful. Whilst early efforts focused primarily on the external variables that facilitated technology usage, more modern theories have prioritised the factors which influence an individuals' intentions to use technology (Legris *et al*. 2003).

Given the context of this thesis, we will begin by considering some frameworks linked to educational technology. Two prominent theories will be considered here: Technological pedagogical content knowledge (Mishra and Koehler 2006), and Communities of Practice (Lave and Wenger 1991). They were chosen as they are most frequently utilised within education

technology research and so were deemed to be most likely to have explanatory power within the context of this study. Technological pedagogical content knowledge has clear links to digitally literate practices and Communities of Practice resonate with the social learning processes that occur within CPD. What is to be explored then, is their capacity as a lens on the wider picture that has emerged from the data of this study: the four spheres of concern.

5.2.1 Technological Pedagogical Content Knowledge (TPCK)

Mishra and Koehler (2006) identified that whilst pedagogy and subject knowledge had been recognised as interlinked teaching competences (Shulman 1987), technological practices were still viewed as a separate set of skills. Additionally, it had been noted in the wider literature that teachers' CPD in relation to technology often consisted of purely functional technical skills, rather than more critical approaches or practices linked to pedagogy and subject content (Lankshear 1997). This only sought to exacerbate the issue. Therefore, TPCK was developed in an attempt to show the interrelated nature of technological knowledge, alongside pedagogical and content knowledge, and to capture the kind of teacher knowledge necessary for successful technology integration into teaching and learning.

> TPCK is the basis of good teaching with technology and requires an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones.
>
> (Mishra and Koehler 2006, p. 1029)

The visual framework is used to illustrate the different combinations in which the three types of knowledge can be used. It shows the relationships between the different elements, and they work to complement and constrain one another. In the illustration below, it can be seen that the wider context is also represented. This does appear as something of an afterthought in the representation, as very little detail is given as to what the context might be and role it might play.

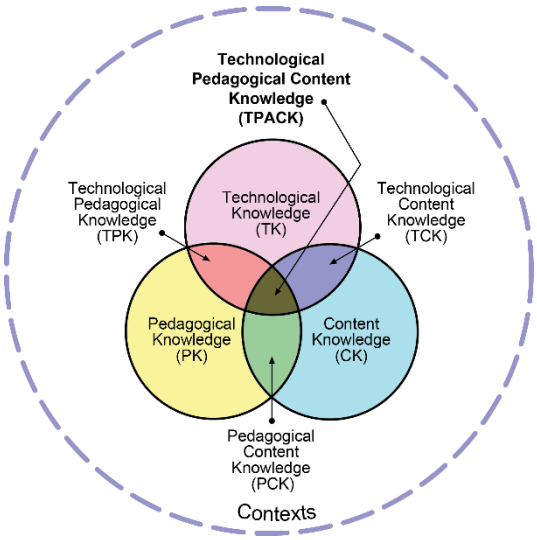


Figure 5.5 TPCK visualisation (Mishra and Koehler 2012)

Here was can see the interplay between technological knowledge and pedagogical or content knowledge. It also highlights that the best practice is that which falls at the intersection of all three sources of knowledge (Mishra and Koehler 2006). These practices are those which, as noted above, consider: how the technology enhances the wider learning experience; how the technology helps to deliver the content of the lesson, how pedagogical knowledge can be used to improve the use of learning technology, how pedagogical knowledge shapes the content being delivered, and how the content to be taught shapes choices around pedagogical approach and learning technologies used.

TPCK has been used in educational research in a number of settings, such as to assess in-service teachers' views of educational technology, to shape initial teacher training programmes and to measure technology integration in schools (Dalal *et al*. 2017). The framework balances broadness with clarity to produce a tool which can be used as a pedagogical and research tool. Within schools it can be utilised as a reflective or auditing tool and researchers can use it as an analytical lens or even a data collection tool (Mishra and Koehler 2006).

When we consider the key concerns of the teachers within this study, we can see that the TPCK offers great explanatory power for a teachers' professional working concerns. The focus of TPCK on pedagogy and subject knowledge shows strong links to the *teaching context* sphere of concern that emerged from this study. It reflects the value of relevance identified by the participants in this research by showing that good use of educational technology requires consideration of the teaching context. In relation to the wider environmental and social influences, however, it doesn't account for their impact on decisions to engage with DL CPD. It also does not take into account the teacher's perceptions of their personal ability with technology that have been shown to hold great significance within this research. Mishra and Koehler (2006) themselves acknowledge that the framework does not tell the complete story, and instead aims to provide a framework to consider one element of it. Therefore, whilst TPCK

offers the chance to consider the *teaching context* sphere in more detail, the remaining three spheres cannot be discussed through this lens.

Table 5.1 - Spheres and TPCK comparison

Teaching context	TPCK
Personal ability	
Support systems	
School culture	

5.2.2 Communities of Practice (CoPs)

Communities of Practice (CoPs) is another theory that was developed in the context of learning and has since been used prolifically within educational technology (Lave and Wenger 1991). Given the prominence of support systems and social influences within the data, this is an appropriate perspective to consider. The CoPs theory was developed as a conceptual framework to aid the understand and enabling of learning (Wenger 1998). It is predicated upon the belief that learning is an inherently social process that allows us to construct meaning within our own world. Communities of practice are described as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly' (Wenger and Wenger-Trayner 2015, p.1).

The majority of CoPs are informal groups, brought together by a shared interest and passion that has led to the sharing of practice and knowledge amongst its members. Within an educational context, these can be seen in local hub and spoke groups for subject teachers, special interest groups such as SEN and educational technology or in online communities such as Facebook groups or Twitter chats. In these examples, teachers and education professionals have come together through their shared interest in education, and possibly a specific element of it, and have begun to share their practices and their knowledge with one another. In so doing, they are all engaging in a community of practice and are developing their professional identity through their participation in the community (Wenger 1998).

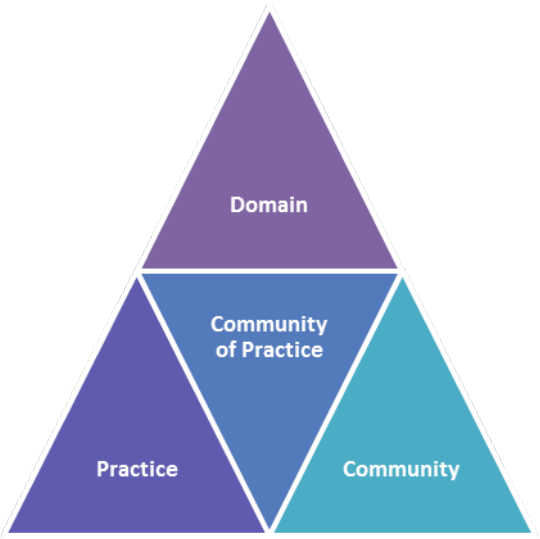


Figure 5.6 CoPs visualisation

Given that CoP often occur informally, the purpose of the CoPs framework is essentially to support the application of what works in those contexts, implicitly and organically, into formal learning situations. Three crucial elements have been identified as the constituents of a CoP, as illustrated above (see Figure. 5.6), that is by 'developing these three elements in parallel that one cultivates such a community' (Wenger and Wenger-trayner 2015). The domain represents the shared interest of the group. For an educator, this may be teaching in its broadest sense, or it may a specific topic such as their subject specialism or digitally literate practice. The community represents the relationships that are created, and the learning that stems from them, through engagement and activity in the group. For educators, this could bring together teachers from different schools, where practices or demographics are different, again offering new insights and opportunities to learn from one another.

Finally, the practice represents the knowledge base of the community, and the practices in which they share this knowledge. For teachers, their knowledge comes from their education, formal training and professional experience. Teachers will have varied levels of experience and this will manifest as information and resources that they can share within the community. This could be through a variety of platforms, as resources may be physical or electronic.

For the teachers within this study, their social learning often appeared to fall at either end of the spectrum. Either very formal, externally-organised training sessions, or very informal chats with colleagues. Some participants noted groups that they engaged with, either face-to-face or through social media, but this was less common. For many of the teachers involved in this study, their main source of community would be through their local school network, sharing practice within their department or across departments depending upon the topic being shared. Some expressed interest in engaging with more such communities but found that they often struggled to find the time to locate and participate in them.

Again, we can see that whilst the CoPs model offers insight into some of the spheres highlighted by the data, others are still unaccounted for. The practice and domain elements of

the CoPs framework can both be encompassed within the *teaching needs* sphere, as it represents the focus of their work and the activity within it. What is not represented by the CoPs framework, however, is the individual's *personal ability* and confidence in their practice. The community element of the CoPs framework broadly covers both of the *support systems* and *school culture* spheres, but is too wide a concept to adequately provide a lens through which to explore these. Once again, the data collected here requires a fuller framework through which to be discussed.

Table 5.2 - Spheres and CoPs comparison

Teaching context	Practice and Domain
Personal ability	
Support systems	Community
School culture	

It can be seen that the theories generated within the education research field have thoroughly explored the personal and social learning elements of technology integration. Whilst the focus here is on the individual teacher and their DL development, by nature this involves a consideration of technology. It is useful, therefore, to consider the theories generated within the information systems research field, to see how they align with the four spheres of concern. Again, two models will be considered which, though originating from a technology focused background, have also been appropriated for educational research. These two models were specifically chosen for their prominence in education research, suggesting that they were suitable for the context of this study. The Technology Acceptance Model (TAM) (Davies *et al*. 1989) is a popular model within educational research (Teo 2009, Legris *et al*. 2003) and the more recent UTAUT (Venkatesh *et al*. 2003) is also being considered more frequently within the field (Nistor *et al*. 2014, Cheah *et al*. 2014).

5.2.3 The Technology Acceptance Model (TAM)

The technology acceptance model (TAM) was designed to 'predict, explain and increase user acceptance (Davis *et al*. 1989). It was created by reframing the Theory of Reasoned Action, itself an explanatory model designed to predict people's intended behaviours (Ajzen and Fishbein 1975), into a model with specific focus on an individual's intentions to use a new piece of technology. Within its original context, the TAM was used to determine the probability of system usage (Legris *et al*. 2003). Within an educational context, it is used to investigate the integration of learning technologies into teaching practice (Teo 2009).

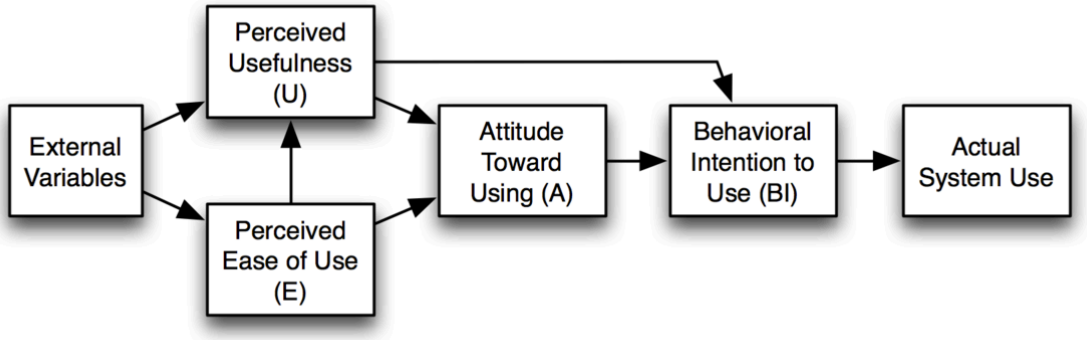


Figure 5.7 TAM visualisation (Davis et al. 1989)

The TAM proposes that intentions to use technology are guided by two main concerns: perceived usefulness and perceived ease of use. Perceived usefulness relates to how well the individual believes the new technology will perform the work they require of it. In a teaching context, this would include how well the device meets teaching and learning needs. Perceived ease of use refers to how easy the individual believes the new device will be to learn. These two perceptions influence the individual's overall attitude towards a new piece of technology and, in turn, their intentions and actual usage of that technology.

As has been noted previously, relevance of new practices and tools was very important to the participants in this study. If CPD was not able to make it clear how a new practice or tool would improve their current teaching, or respond to their immediate needs, many participants felt that they would be unlikely to implement the practice or tool. The teachers in this study also discussed the value of technical knowledge, in relation to when they felt they lacked confidence in their own ability and when they identified others whose skills and knowledge they admired. Again, the ease of a new approach or tool was seen to be a deciding factor in a teacher's intentions to implement new practices.

As with the TPCK framework, TAM offers a useful lens through which to consider a teacher's personal interests in relation to their technology acceptance. Perceived usefulness and perceived ease of use both clearly align with the *teaching* context and *personal* ability spheres of concern identified by the participants of this study. Also similar to the TPCK framework is the lack of sufficient consideration given to the wider social and environmental influences on an individual's intentions to implement new digitally literate practices. Once again, we are left looking for a framework that can offer wider applicability to the data.

Table 5.3 - Spheres and TAM comparison

Teaching context	Perceived usefulness
Personal ability	Perceived ease of use
Support systems	
School culture	

5.2.4 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al* 2003) is the culmination of a number of other behavioural prediction models, including: the theory of reasoned action (TRA) (Fishbein and Ajzen 1975), the theory of planned behaviour (TPB) (Ajzen 1991), the technology acceptance model (TAM) (Davis 1989), the motivational model (MM) (Davis *et al*. 1992), the model of PC utilization (MPCU) (Thompson *et al*. 1991), the diffusion of innovation theory (DOI) (Rogers 1995) and social cognitive theory (SCT) (Bandura 1977). These models were cross-referenced and synthesised by Venkatesh *et al.* (2003) into one theory in an attempt to understand how an individuals' intention to use a new technology is formed. The theory identifies four core determinants of intent to use and actual usage of technology, along with four key moderators that effect the impact of each determinant (see figure 5.8).

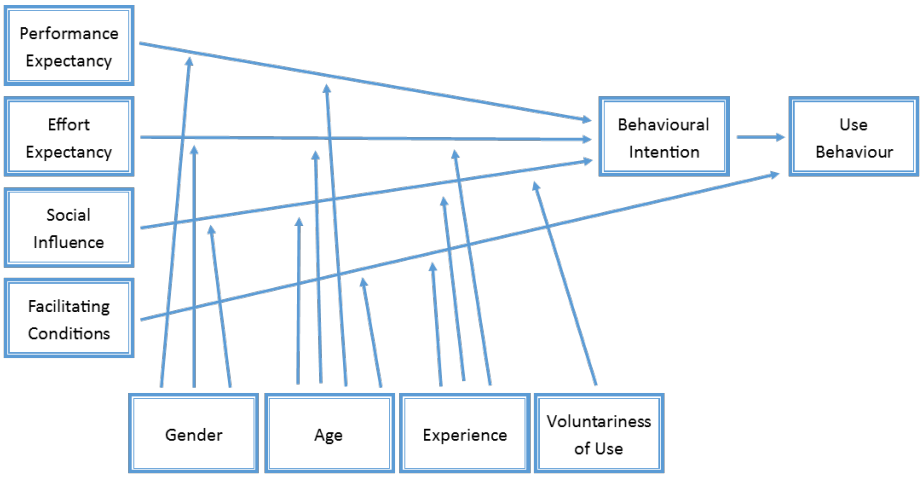


Figure 5.8 – UTAUT visualisation (Venkatesh et al 2003, p.447)

Across each of the eight original models used to create the UTAUT, and the empirical research used to confirm the universality of the final theory, performance expectancy was found to be the most influential factor in behavioural intention (Venkatesh *et al* 2003). It is also known, within the Technology Acceptance Model, as perceived usefulness which perhaps offers a clearer indication of what it represents (Davis *et al* 1989). This factor relates to the extent to which an individual believes that technology will enhance their working practices. As discussed within the previous section, for a teacher, performance expectancy relates to how well a new digitally literate practice meets their current teaching and learning needs.

Effort expectancy was also found to be a high impacting factor, referred to as perceived ease of use within the TAM. This is the extent to which the individual believes they can easily learn how to make use of a new technology (Ventaktesh *et al* 2003). Whilst performance expectancy remains significant to the individual throughout the early stages of engagement, effort expectancy was only found to be influential prior to technology use (Venkatesh and Davis 1996). This suggests that if a teacher can be supported in trying a new device, any negative assumptions about a technology could be removed. This would, of course, rely on the first experience being well supported so as to remove unnecessary barriers.

The final factor influencing an individuals' intention to use technology is social influence. This is the extent to which the wider culture of the individual's setting encourages them to make use of technology (Venkatesh and Davis 2000). In earlier iterations of the TAM, this was viewed as an influence on perceived usefulness, though within the UTAUT it has been acknowledged as a direct influence on intentions to use technology. In addition to these factors is facilitating conditions, which alongside the other factors that influence behavioural intention, have a direct impact on actual use of new technology (Venkatesh *et al* 2003). Facilitating conditions are the extent to which an individual's environment, or a teacher's school context, is able to support their use of technology. This could refer to access to appropriate resources as well as support from colleagues.

The interplay of these factors is visualised above, and moderated by four additional characteristics: gender, age, experience and voluntariness of use. Gender and age relate directly to the individual who is choosing whether or not to participate in the technology. Experience refers to the extent to which the individual has engaged with the technology. This could, however, also be considered from the viewpoint of an individuals' overall experience with technology as other research has shown links between DL and wider technology experience (Helsper and Eynon 2010). Finally, voluntariness of use refers to the external demands on the individual to make use of the technology. For example, the research underpinning the UTAUT found that in situations where use of technology was not mandatory, the effect of the core determinants was less powerful than in situations where it was mandatory (Venkatesh and Davis 2000). It is interesting to note these findings in light of the Government Standard for teacher's professional development, which despite being informed by evidence from educational researchers and practitioners, is itself non-mandatory (DfE 2016a). Venkatesh and Davis' (2000) research suggests that if the Standard were mandatory, it would be more beneficial to teachers as more schools and CPD providers would be compelled to deliver high-quality CPD.

Within this study the moderating factors will not be considered as whilst demographic data pertaining to each participant was collected, there was not sufficient time or support for the researcher to explore these within NVivo in necessary detail. There is, however, scope to follow up on this research with a further study considering this element of the research project. Table 5.4 below illustrates the alignment between the four spheres of concern highlighted by the participants of this study and the four determinants of the UTAUT model. Whilst the TPCK, CoPs and TAM frameworks were able to explain certain elements of the situation that has been captured within this thesis, the UTAUT is the only model that can offer a lens through which to discuss all four spheres.

Table 5.4 - Spheres and UTAUT comparison

Teaching context	Performance Expectancy
Personal ability	Effort Expectancy
Support systems	Facilitating Conditions
School culture	Social Influence

It can be seen that of the applicable models, the UTAUT has the most explanatory power for investigating the findings of this research in more detail. The UTAUT was deemed most appropriate given its specific focus on technology acceptance, rather than generic behaviour prediction, and its refined consideration of the determinant factors. The TAM is used most often in the education literature (Teo 2009) though since its creation in 1986, Davis and colleagues have revisited the determinants with a view to understanding their influence more deeply (Davis *et al*. 1992, Venkatesh and Davis 1996, Venkatesh and Davis 2000). Therefore, the UTAUT is not only the amalgamation of seven existing models, but is also the additional research conducted in understanding all elements of the model. These components of each determinant offer greater links between the model and the findings of this research.

5.3 Developing the Teachers' Digital Engagement Framework

Whilst the UTAUT aligns most clearly to the findings of this study, it should still be noted that it was designed with businesses in mind, not educators. Whilst the top-level categories fit well with this research, the wider context within which it is being applied is very different. In a business context if a new technology is being introduced it is likely to be necessary for individuals to make use of the technology as part of daily working lives. For teachers, however, technology has the ability to enhance and extend teaching and learning, but is not necessary for high quality practice to occur. Technology is, essentially, an optional, additional practice for teachers and this adds an extra factor to the UTAUT that is not explicit in the existing model.

Furthermore, the UTAUT encourages a technology focus, over a human focus. The aim of this research is to investigate how CPD supports a teachers' DL development, the focus here is on the human element of development, not on the technological element of the tools used. The TPCK and CoPs models aligned well with the social elements of the spheres, though did not map to all aspects of the data. Whilst either of these models could have been adapted in the place of the UTAUT, this would have required the creation of entirely new, conceptual, categories. The UTAUT, whilst requiring a repurposing of its focus, does map to all four spheres within the data and these categories are empirically proven to impact technology integration and acceptance decisions (Teo *et al*. 2007). Therefore, by adapting the UTAUT to an educational context, the researcher is creating a model with the greatest potential for meaningful application.

If we consider the four spheres of concern, as identified by the data collected for this thesis, we can use them to realign the UTAUT into a more person-centred model. It should also be noted, that in relation to the data collected here, facilitating conditions are hypothesised to have an impact on intentions to use technology, unlike in the original model where they are believed to only impact actual use (Venkatesh *et al*. 2003). The data from this study suggests that within a school setting, a teachers' beliefs about the environment in which they are implementing new digital practices, the support systems available as well as access to the necessary technologies, play a significant role in a teachers' intentions to trial new practices. This was illustrated explicitly by the following participant:

> *'…we've all been in that situation where "Is [colleague] in?" "no", "Is [colleague] here today?" "no", "have you seen [colleague]?" "no" - ok I'm stuffed I can't do anything then because there isn't, you know, there isn't that knowledge and skills base..."*
>
> (Focus group, S2T8)

Within this person-centred model, the influence of facilitating conditions within a school setting are given a more prominent role.

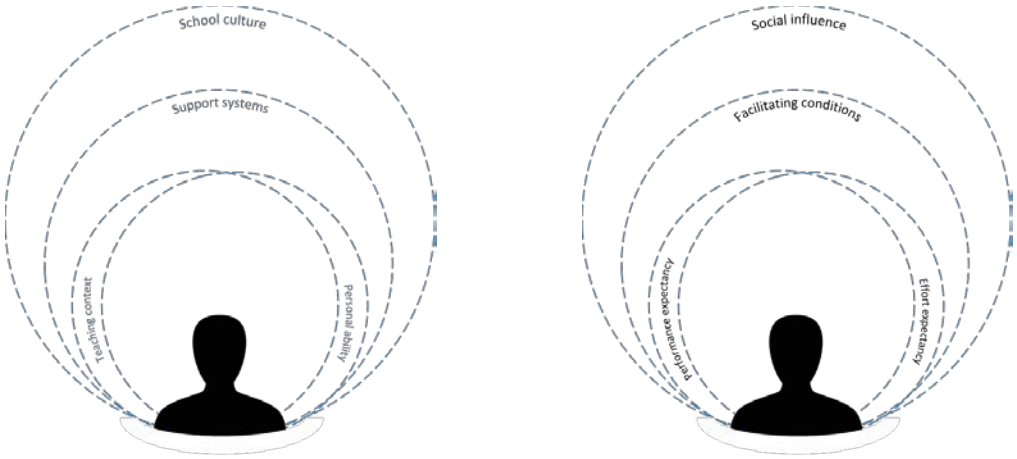


Figure 5.9 - four spheres and UTAUT

The realignment of the model is taken a step further by considering the determinants from a human perspective. So rather than performance expectancy, whether or not the technology is believed to be effective in supporting an individual's practice, the focus of the determinant is shifted, to Professional, the extent to which the teachers' professional needs can be met by the digital practice. This change refocuses the perspective of the model from objective to subjective. This more faithfully represents the context of the data, a personal matter to those involved. The model now focuses on the needs and perceptions of the individual, rather than focusing on the affordances of the technology. This also better encapsulates more critical DL practices that focus on reflection, understanding and critical consideration of information than on the use of specific tools and devices. Figure 5.10 below illustrates the Teachers' Digital Engagement Framework.

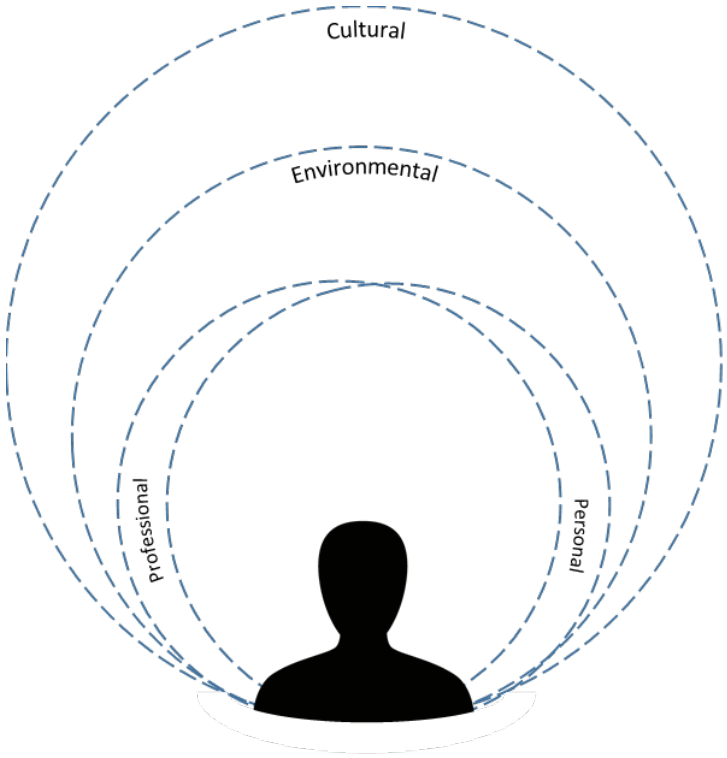


Figure 5.10 – Teachers' Digital Engagement Framework

Here we can see that the main determinants are the individual's professional needs and personal ability. These reflect both the spheres of concern of the participants from this study, and the original UTAUT determinants. The environmental factors reflect the facilitating conditions, or support systems, at an individual's disposal. The environmental label was chosen to represent both the social, developmental setting and the physical availability of resources. Finally, the Cultural factor represents the social influences of the school setting. It should be noted that the reordering of the determinants does not reduce the importance of social interaction in teacher learning. Whilst environmental factors were found to be more impactful than cultural factors, the former still involves a great degree of interaction between teachers and colleagues throughout the learning process. Within the Teachers' Digital Engagement Framework, there is a significant distinction between social interaction, such as approaching a colleague for guidance on a new piece of equipment, and social influence, such as seeing a senior colleague make effective use of a new digital practice.

With the high-level labels of the Teachers' Digital Engagement Framework in place, the content of these factors now needs to be reconsidered in light of an educational setting. As noted in the previous section, 5.2.4 *The UTAUT*, an extensive body of research was conducted to explore the individual determinants in more detail (Davis 1989; Davis *et al*. 1992; Venkatesh and Davis 1996; Venkatesh and Davis 2000). These studies identified factors that influenced the judgements made by individuals under each determinant, as shown below in table 5.5.

Table 5.5 - UTAUT influencers

Performance Expectancy	Job relevance
	Output quality
	Result demonstrability
Effort Expectancy	Self-efficacy
	Objective usability
Social Influence	Subjective norms
	Image
Facilitating Conditions	Physical environment
	Support environment

Through a theoretical extension of the TAM, Venkatesh and Davis (2000) identified three cognitive instrumental processes that may determine performance expectancy conclusions: job relevance, output quality and result demonstrability. These are the comparative judgements that individuals make between their current working system and a new system when considering bringing a new technology into their practice. Job relevance is how well suited an individual believes a system is to their current working needs. This is an important element of the performance expectancy evaluation, as whilst the other elements may negatively impact upon an individual's overall perception of a technology's usefulness, if it is not believed to be relevant to existing needs it could be removed from consideration entirely. There are clear links here to an education setting, and to this study specifically, as relevance was a major concern to the participants.

Output quality relates to how the individual perceives the system's ability to perform the tasks they require. In an educational context, this might involve the individual considering how the system may perform compared to more traditional, and possibly analogue, techniques. It could also involve ensuring that a technology meets school and professional standards, for example, schools may have particular layouts for lesson planning which a new system would need to adhere to. This was not an explicit concern of the participants within this study. It is possible, that for a teacher, output quality is something that would be considered as part of overall job relevance. Within a climate of high standards and performativity, teachers are likely to look for practices that create high-quality learning experiences implicitly. Even from a more traditional duty of care perspective, teachers want the best for their students so will always be looking for the best way to support them.

Result demonstrability is the extent to which an individual is able to see the impact that the new system is having on their practice. This is particularly important for teachers, given the current climate of accountability and the focus on measuring performance and progress. Systems and practices that have a clear, measurable impact in the classroom will appear much

more favourable. Again, it is unlikely that this is something that teachers would consider explicitly, as illustrated by the lack of mention of this issue within the data collected. Given the accountability measures that teachers must engage with every day, is it possible that these practices are ingrained in daily teaching practices. It is more likely that this is yet another facet of a teachers' consideration of a new practices' relevance to their professional needs.

Following further theoretical explorations of the TAM, it was concluded that effort expectancy is underpinned by two key antecedents: self-efficacy and objective usability (Venkatesh and Davis 1996). Self-efficacy is the individual's perception of their own ability within a certain context, and a known influencer of behaviour change (Bandura 1977). In this context, self-efficacy refers to an individual's beliefs about their own ability to make use of technology. Objective usability is the information an individual has at their disposal about how a system works. Interestingly, it was found that objective usability did not play a significant role in the formulation of effort expectancy until after engagement with a new technology (Venkatesh and David 1996). Therefore, it would seem that only assumptions about personal ability and not about the functionalities of a system, influence early perceptions about the effort needed to engage with a new technology. This did not always appear to be the case within the data, where a participant noted that if they believed a piece of technology would be complicated for them to learn, they would revert to tried and tested teaching methods instead of trying to learn the new approach. Most often this was cited as risk aversion, in an attempt to maintain order in the classroom.

> '*So if I don't know how to do it then I'll just dismiss that idea because I haven't got time to go and find somebody who can tell me how to do it, and then show me how to do it*'
>
> (Focus group, S2T4)

It would appear, therefore, that both self-efficacy and objective usability are applicable to an educational setting. In an effort to keep the Teachers' Digital Engagement Framework more person-centred, objective usability will be renamed first impressions so as to illustrate the thought processes behind this antecedent more clearly. It also captures the wider role of both assumptions of a new practice and also the impact of a teacher's first encounter with a new tool or approach.

It is important to note that technology acceptance for teachers has an additional facet, in that they do not only need to consider the relevance of a new practice and their ability to engage with it, but also the likelihood that they will be able to learn it within the time constraints of their existing workload. This consideration of the additional obstacle of other teaching requirements and priorities is not considered within the UTAUT model. Teaching requirements refers to obligatory workloads such as assessment, lesson planning and resource creation, which can often leave little time to consider how technology might be utilised. As it was not the intention of this thesis to investigate this empirically, this thesis can only hypothesise that workload fit would sit within the greater determinant of Professional factors, when accommodated into the Teachers' Digital Engagement Framework. Further testing of this model is required. Given its concern with how realistic a new approach would be within existing working constraints; it is clearly a professional concern. There are also links to the

Personal factors here too as it contributes to the teacher's perception of their own ability to learn a new practice 'in time', however, it is not explicitly linked to a teachers' self-efficacy but to their actual workload.

As discussed in Thompson *et al*. (1991) facilitating conditions can refer to both physical and social support systems and do not rely entirely on the availability of technology. In an educational setting, this refers primarily to how an individual perceives their support network. If a teacher feels that they have the adequate resources and support from colleagues, technicians or external trainers, they are more likely to feel that they will be able to make effective use of a new technology. Within the Teachers' Digital Engagement Framework, this will be referred to as support systems, to add to the humanised model, rather than the more formal support environment of the traditional UTAUT.

These conditions may also refer to the environment in which an individual works and with it the physical resources available to them. Access to resources was not highlighted as a key concern of the teachers within this study, most likely due to their recent engagement with the BSF programme. It should be noted that whilst general access to technologies was not a concern for the teachers within this study, technical and network issues were considered major barriers to engaging with CPD and taking digital practices forward as illustrated in 4.1.3 *being let down by technology issues* and 4.1.4 *being let down by networks issues*. In this way, some staff could be seen to have experienced issues in accessing working tools. It is also a likely concern for other schools in the country, therefore, by adding access to this model it increases the possibility of it being more widely applicable and representative.

As with the other elements of the UTAUT, social influence was explored more deeply to highlight the forces working behind it (Venkatesh and Davis 2000). Three interrelated forces were identified: subjective norm, image and voluntariness, though it should be noted that the latter was recognised as a moderator of subjective norm at this stage, which may explain why it is included in that capacity within the UTAUT. Subjective norm is 'the perceived social pressure to perform or not to perform' a specific behaviour (Ajzen 1991, p.188). Research has shown that social influences are particularly powerful within the schooling environment (Opfer *et al.* 2011). This may take the form of admired colleagues modelling good practice or senior staff making the importance of technology across the setting clear.

Tied to this is image, an individual's desire to keep up appearances or even potentially enhance them if the behaviour is associated with higher social status. The combination of social pressures and a desire to heighten one's social status are a powerful mix in influencing an individual's technology acceptance. Within a school setting, image could be linked to a number of areas. Image may relate to a teacher's professional identity, which they believe could be strengthened by advancing their DL. It could also be linked to the wider culture of performativity in schools. Within this context, image can be seen as a potential controlling mechanism, using the expectations of teachers as a way to drive their engagement with new practices. It is important to consider then, how teachers' PD can encourage DL, without resorting to the latter of these two approaches.

Table 5.6 – Teachers' Digital Engagement Framework influencers

Professional	Relevance
	Workload fit
Personal	Self-efficacy
	First impressions
Environmental	Support systems
	Access
Cultural	Subjective norms
	Image

Having reviewed the high-level determinants and their influencing factors, an education-focused version of the UTAUT model - Teachers' Digital Engagement Framework - can now be presented below. This is a theoretical model, since it was not the purpose of this thesis to empirically test it. It is developed to suit the data from this study more fittingly and in so doing to be more applicable to an education setting. Further research would need to be conducted to test the fit in an empirical study. For the purpose of this thesis, to provide a lens through which to consider the findings of study and what how they can shed light on the DL development of secondary school teachers, this model is a suitable fit.

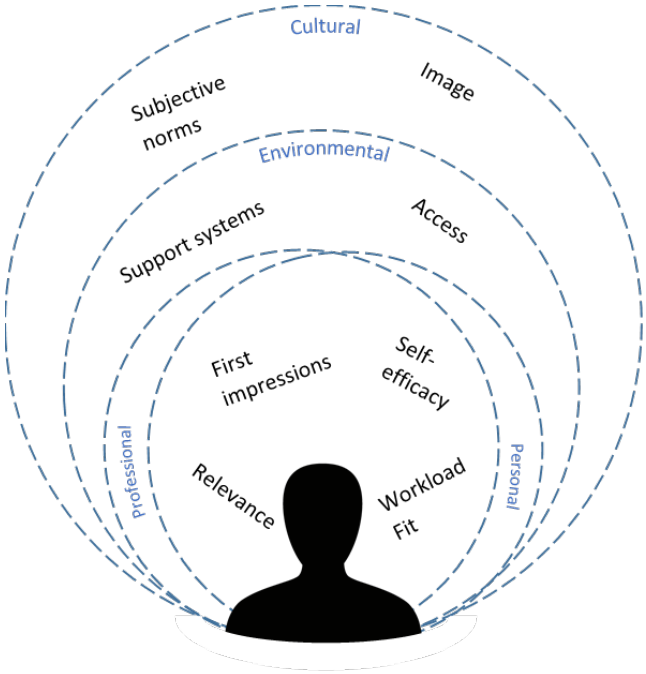


Figure 5.11 – Teachers' Digital Engagement Framework, with influencers

5.4 Chapter Summary

The findings of this study show the conflicting responsibilities at play during teachers' DL CPD. Given the restricted time that teachers have available to engage with CPD, they are not always able to work on all areas of their practice. For many of the teachers within this study, DL CPD was not engaged with purely because other areas of their practice took higher priority and there was not sufficient time to address all areas of learning. These findings led to a consideration of how teachers were making judgements about the CPD with which they engaged.

Four spheres of concern were highlighted within the data as being of importance to teachers when considering their PD. First, the professional sphere represents the individual's teaching needs. Second, the personal sphere relates to their perception of their own skills. Third, the environmental sphere refers to the support and equipment available to the individual. Fourth, the cultural sphere includes the wider influence of the school setting.

Having identified these important influences, the researcher turned to existing learning and technology integration literature to find a model that could be used as a lens to investigate the findings more deeply. A number of frameworks were explored and compared against the four spheres to find a good fit for the data. A close match was found in the UTAUT, though the technology focus did not align with the human focus of the research. Therefore, the UTAUT and four-sphere model were used to create the Teachers' Digital Engagement Framework to act as a lens for the findings. This will be explored throughout the next chapter.

6. Discussion

Using the framework developed in 5.3, *Developing the Teachers' Digital Engagement Framework*, this chapter will consider the data through each sphere of concern in order to consider the phenomenon more deeply. Each sphere will be used as a lens through which to explore the data collected, examining the influence of each on teachers' technology integration and engagement with DL PD. This will begin with an exploration of teachers' professional needs in relation to their DL CPD, followed by their perceptions of their personal ability in relation to digital practices, the support systems available within their working environment and, finally, the influence of their wider school and professional culture, as shown in figure 6.1.

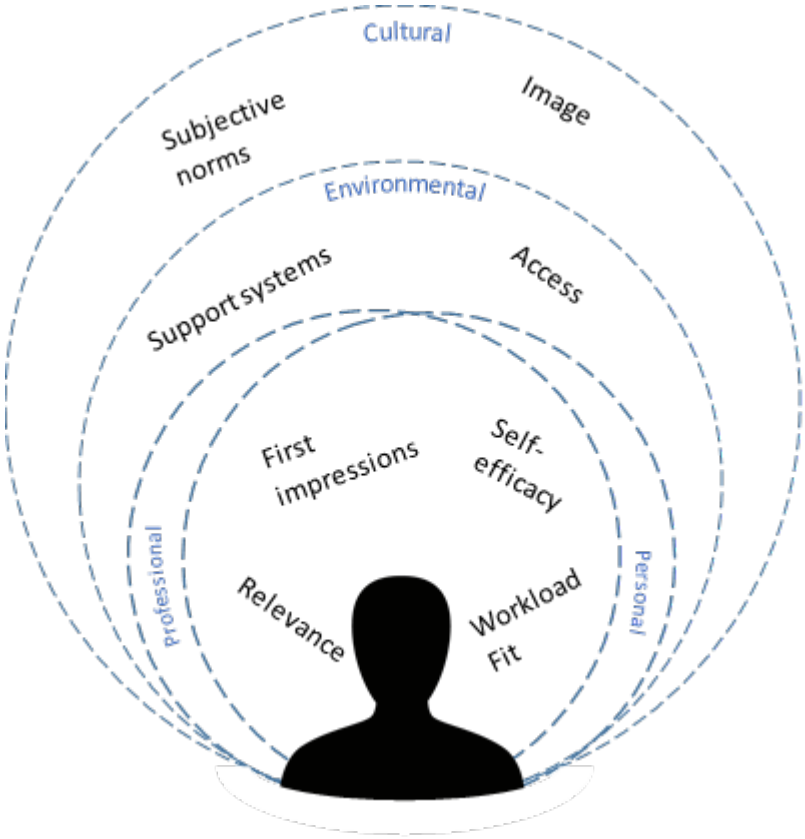


Figure 6.1 Teachers' Digital Engagement Framework

Having considered teachers' DL CPD in more detail, the framework will then be used as a scaffold to highlight support structures that could benefit individuals and institutions in developing school staff DL. In this way, the framework that has been developed throughout this thesis can be seen as both an exploratory and support framework, creating not only greater theoretical understanding of the situation, but also practical advice and guidance to support it.

6.1 The professional sphere

The professional sphere of concern relates to a teacher's perceptions of how well their teaching needs can be met. The most important elements of this are the relevance of DL CPD,

how well it aligns with the teacher's current needs, and the extent to which it fits within their existing workload, if it requires an amount of time and effort compatible with what the teacher has available. As noted in 5.1, *emerging theory*, teachers are currently working in a period of increased accountability and this has resulted in a rise in non-teaching workloads which has left many teachers with little to no time for DL CPD. This is exacerbated by the fact that, as the data collected within this study shows, digital practices are not always prioritised by teachers, with some participants explicitly stating that they did not view technology as an important element of their practice. Here we can see that teachers did not perceive the practices shared through CPD as being capable of supporting their current teaching needs, of being relevant to their practice, and so did not consider integrating them.

It was also noted, however, that teachers were not always aware of the technologies available to them, or how they might impact teaching practice, which clearly complicates their perception of how well their needs can be met. This suggests that there would be a benefit to ensuring that all staff are aware of the technologies available within the school. This could be achieved by the member of staff responsible for CPD through induction training, INSET days and other whole school CPD events, staff bulletins or communal noticeboards.

> '*I think though, there's a place for, there must be a list of maybe the top ten things that are the most frustrating for us in a lesson that can be solved, that you must do all the time [referring to D1], that [technician] must do, that some in-service on that - like what do you do if your printer won't print? You know, why aren't you getting any sound out of your projector? Those sort of things that would actually, you know, troubleshooting with a crib sheet almost – check this, check that, check the other. So that might make us feel less frustrated and less afraid of using IT. Becoming, not technicians, but our own problem solvers*.'
>
> (Focus group, S1T1)

Schools can support their staff in making connections between pedagogy and digital practices by increasing awareness of the tools available to teachers. Support in the form of interactive CPD or resources, such as walkthroughs, designed to refresh their knowledge of available technologies would also support teachers in understanding how best to implement digital practices to aid their current teaching needs, particularly if they have not needed to use specific equipment since receiving initial training. The inability to embed new approaches following CPD was a common concern for the teachers in this study, as often technical issues would mean that they were not able to make immediate use of new practices. Refreshment training would be of benefit to both staff and schools, as not only would this increase opportunities for individual staff members but it would also ensure greater value for money in the purchases made by schools.

As illustrated in section 4.1.1, *Conflicts of interest*, one of the biggest barriers to effective DL CPD for teachers is the imbalance between the myriad responsibilities and roles they need to perform, and the time and resources they have available to do so. The data also demonstrated that many teachers viewed digital practices as requiring more time and resources than more traditional, analogue approaches. The larger initial investment necessary to utilise technology

within the classroom was viewed as a significant hurdle and often deterred staff from attempting to learn new digital practices. Due to this, teachers want reassurance that new approaches will be successful, both academically and technically, if they are to invest time and resources into them.

This is likely why the teachers spoke cautiously of CPD that is delivered by 'experts' from outside of teaching. This is particularly the case in relation to DL CPD, where it is perceived that trainers are often also sales staff and so their primary goal is to sell the product, rather than effectively teach staff how to use it. There is a commonly shared view amongst the participants that CPD should be delivered by those with experience of working in a classroom, as they are most likely to be able to make links between the device or software and relevant teaching practice.

> '*They respond better to practising colleagues. There's a, perhaps sometimes, more of an acceptance and an immediate engagement with colleagues who are practicing than a supposed expert - be that a digital expert or anybody*.'
>
> (Focus group, S6T3)

CPD delivered by a teaching colleague increases the likelihood for teachers that the practice being taught will have relevance to their teaching. It is also possibly due to workload constraints that teachers noted the value of having evidence of success for new approaches. Teachers need to be reassured that if they decide to take on a new digital practice, it will be achievable within their current workload, and a good indicator of that is whether or not other teachers have been able to make effective use of the technology. A fellow educator will also be able to give detailed information about the effective implementation of a device or programme, providing a teacher with a starting point for their own experimentation.

More barriers are faced, however, when a teacher begins to search for information and resources pertaining to a new practice. Given the lack of a national body to support teachers in their engagement with digital practices, there is currently nowhere for teachers to turn for reliable advice on new teaching approaches. For an individual searching alone, the abundance of information available online can be overwhelming. Whilst some individuals and communities have developed via social media to share best practices and resources, one must first have the skills to access these, and finding the right communities amongst the sea of social media users can also be an overwhelming task. What is needed is a national strategy for DL, but in the meantime we must look to more immediate ways in which teachers can be helped to access reliable and relevant information to develop their DL.

This amounts to supporting teachers to make informed choices about their engagement with educational technology. As the Standard for teachers' professional development notes, it is crucial for CPD programmes to be 'underpinned by robust evidence and expertise' and this has been a particular focus of the Conservative Government, since the coalition came into power in 2010 (DfE 2016a, p.1; Goldacre 2013). This position has continued to influence Government plans, such as the promised online platform for evidence-based practice and the provision of free access to over 2,000 educational research journals and ebooks for members of the

Chartered College of Teaching (DfE 2014, Chartered College of Teaching 2017). Whilst this is a positive move for education professionals, it does risk increasing the workload burden of school teachers as they are required to learn how to navigate journal databases, how to formulate effective search terms and how to identify articles of true relevance and value to their needs. There has also been no move to provide time for teachers to engage with research in their daily professional lives and the free access does not address the issues related to information shared outside of academic journals.

The value that teachers place on relevance of CPD also creates difficulties for programmes that focus primarily on the technology and not on the pedagogy, as illustrated by the data collected in this study regarding the BSF programme. It should be noted that the aim of the BSF programme was to equip schools with buildings that are suitable for teaching and learning in the 21st century, not specifically to equip teachers with the skills and knowledge to use technology effectively. As the scheme introduced many new technologies into the schools more should have been done to ensure that staff were sufficiently supported in using them effectively. Educational and community transformation were, after all, the intended outcomes of the original programme design (Mahony and Hextall 2013). Some effort was made for the schools involved in this study, through a knowledge exchange project with a local University, though due to time and staff restrictions, this was more of an additional exercise towards the end of the programme than something built into the process to ensure effectiveness.

What the BSF programme demonstrates is that where DL is involved PD must focus on the learning needs of the school, and then consider how DL might support those, rather than letting the technology lead the process. Despite research over a decade ago showing that implementing technology in schools is not enough to guarantee effective practice (Wagner *et al*. 2005), the significant majority of educational technology initiatives still give little thought to how new technologies will be used effectively, and what support teachers need in making that happen (Haßler *et al*. 2016). Or, as was the case for the schools in this study, the technology implementation is planned, and the staff development is an afterthought, like much of the Government policy outlined in 2.1.1, *Government Intervention and teachers' professional status*.

The data collected showed that where CPD focused primarily on teaching the functional basics of a device or program, which appears to be the case in many of the BSF training sessions, staff struggled to relate the CPD to their current practice or their learning needs. One example of functional CPD is the first observation conducted during the data collection, in which a new application was being introduced to all staff. As recorded in the observation schedule, see Appendix F/i, only 'one example was presented, anecdotally, of another teacher using the app who had encouraged her students to record their own goals on the programme and then follow them up themselves to encourage reflective learning, though no detail was given as to how this was accomplished'. No further examples, or subject-specific advice was covered. Across the study, staff also observed that they may not have a current need for the device or software, and so may not make use of the CPD for some time. When the time does come that

they need to know how to use the device or software, however, they are unable to remember the CPD as it was not tailored to their needs or context at the time of delivery.

> '*I vaguely remember that from [previous school] I think we had some when we went into the new build. But nothing that … I remember.*'
>
> (Focus group, S1T3)

Whilst not stated explicitly, the issue of relevance also links to the Conservative Government's Standard for teachers' professional development. It is noted in the standard that 'professional development should have a focus on improving and evaluating pupil outcomes' (DfE 2016a, p.1). Given that improving pupil performance is generally agreed to be the main purpose of teachers' CPD (Guskey 2003), what the standard highlights here is the importance of a CPD programmes relevance to teaching needs. Therefore, not only is relevance a key concern for the integration of new technologies and digital practices, but it is also valuable to the wider benefits and success of teachers' PD.

6.2 The personal sphere

The personal sphere of concern refers to the teacher's self-efficacy in the use of technology. It is also influenced by the teacher's first impressions of a new technology, and how their first encounter reinforces or undermines their perception of their own ability to make effective use of it. In this way, the teacher is making a calculation regarding the perceived complexity of the digital practice, their assumptions about their own digital ability and, as noted in 5.1, *emerging theory*, if they have the time and resources available to develop their practice.

Research conducted to explore the influencing factors of the original UTAUT found that women and older users were mostly likely to be influenced by self-efficacy and first impressions with a new digital practice (Venkatesh and Davis 1996). This is corroborated by other research that found women were most likely to rank their digital skills poorly (Hargattai and Shafer 2006). This research also discovered that perceptions of digital skill were not generally in line with actual skills (ibid). Though given that it is perceived ability, and not actual skill, that plays an important role in an individual's judgment, these misconceptions of DL need to be combatted in order to support teachers in making the right decisions for their practice.

As noted in 4.1.5, *lacking technical knowledge*, the teachers within this study were faced with a number of experiences in which they felt their technical ability was unable to support them in making use of digital practices. There were clear links to self-efficacy as teachers discussed being reticent to try a new approach as they were 'not very tech savvy' (Focus group, S1T2). Here we can see that the teacher's perception of their ability has been a significant barrier to their engagement with DL CPD. This raises the question of how teachers can be supported in countering these assumptions about their own ability. What systems can be put in place, or resources offered to aid teachers in developing a clearer, more accurate understanding of their digital literacy? A suggestion is presented below in 6.5.2, *supporting the personal sphere.*

Combating self-efficacy misconceptions can only go so far, however, as regardless of an individual's confidence or skill, the first interaction with a new technology can still be daunting.

The research conducted by Venkatesh and Davis (1996) highlighted that assumptions about the difficulty of a new technology have the most influence immediately after first use. This places great importance on a teacher's first encounter with a new technology. For many, this first experience may be during a CPD session, or in preparation for one, highlighting again the value of well-designed and delivered CPD. It also highlights the importance of supporting teachers through the initial hurdle of getting to grips with a new technology.

As noted earlier, teachers often felt that engaging with a new digital practice required far more time and resources than other approaches. Time, in particular, was considered a major barrier. If a teacher wishes to use a new piece of software or hardware in their teaching they need the time to learn how the system works for themselves, the time to consider how the system could be applied to their teaching, the time to plan out lessons and set up the system, the time to teach their students how to use the system and, finally, the time to reflect on the success of the system for meeting learning needs and how the system may be used in other ways, or its current use improved. Just the first of these instances could require a significant amount of time, so it unsurprising that some teachers stated that they would chose a different approach, instead of investing time into a digital practice. What needs to be considered is how teachers can be supported in learning new digital practices. Is there a way to break the hurdles down into smaller obstacles, to make them easier to handle? This is, again, discussed in more detail below in 6.5.2, *supporting the personal sphere*.

6.3 The Environmental sphere

It is noted in 5.3, *developing the Teachers' Digital Engagement Framework*, that the Environmental sphere, the equivalent determinant to facilitating conditions within the original UTAUT, was deemed to only have an influence on actual use of technology, not on intentions to use technology. Within the Teachers' Digital Engagement Framework developed by this study, however, the Environmental sphere is very prominent as an influencing factor in the data collected. Encapsulated by this sphere are teachers concerns with the quality of CPD, the reliability of available technologies, the various strategies employed to support DL CPD, the availability of both internal and external guidance, and the CPD resources at their disposal. This sphere represents the physical and support systems that a teacher can access in order to develop their DL.

The support environment in particular was a prevalent topic within the data collected, with participants highlighting a lack of technical support and an overreliance on teachers expected to fulfil the role of technicians in the classroom. Many teachers do not feel confident enough in their technical ability to respond to issues with classroom devices and programmes (The Royal Society 2017) and a reliance on teachers as technicians is another discouraging factor for them. Consideration must also be given to the need for schools to put teachers in this position; and what is causing teachers to have to take on this role. Since the Thatcher Government educational development and political agendas have seen a major shift in the role of the teacher, from lecturer and presenter of knowledge, to facilitator and guide to learning (King 1993). This has been accompanied, due to the increasing accountability within education, by a growing element of administration work and resource development (Harden and Crosby

2000). Alongside these changes, it is not such a leap to believe that the Government would also expect teachers to be the technicians of the technologies within their classroom.

A delve into the literature suggests that, at least for the schools in this study, the cause may be of a more financial nature. Once the coalition Government came to power in 2010, there was a change in focus for the BSF programme through which it became clear that 'the Government intended to move towards a 'building-based' orientation based on efficiency and VfM [value for money], and to remove any emphasis on educational and community transformations' (Mahoney and Hextall 2013, p.863). Participants noted on a number of occasions that their school technicians worked on part-time contracts. This is likely caused by the cuts to school funding as discussed in 1.1 *Context*. When schools across the country are having to resort to requesting donations from parents in order to fund the curriculum, or considering reducing the school week to four days to cover the budget shortfall, it is not surprising that schools are unable to ensure a technician is available onsite five days a week (Adams and Marsh 2017, Weaver *et al*. 2017).

These concerns are further exacerbated by the fact that whilst BSF increased the amount of technology available in the schools, they did not proportionally increase the technician support available. In some cases schools now have less capacity in their technician roles, due to part-time contracts, sharing technicians across sites and reduced numbers of technical staff. A number of the schools also had to take on new staff, contracted by Capita, in place of their existing technicians, meaning that knowledge of the existing school systems was lost in the transition. The reduction of technician time has also resulted in technician workloads increasing when they are on site, due to backlog from their days away, which in itself will then interfere with their ability to deal with immediate classroom issues. For teachers this results in a fear of trying new technologies when the technician is not on site, as should they encounter an issue, they must either find someone else who may be able to help or wait for the technician to return. A number of staff noted that if they did not feel that they could access the help they required within the timeframe of wanting to implement a new tool or practice, they would abandon the idea in favour of more reliable teaching methods.

> '*That's what I end up doing for everything, just [technician]'s number. [other's laugh] It's just [number] 'Alright!' and then if he's not there, it's like the world has collapsed and 'Now what am I going to do?*"
>
> (Focus group, S1T9)

A response is needed to this issue, a role that can bridge the gap between technical and pedagogic support. This is discussed in more detail below in 6.5.3, *supporting the environmental sphere*. Where schools do not have a full-time technician on site, teachers are likely to be negatively affected when considering the support systems at their disposal. This system of part-time or multi-site technicians is essentially restricting the number of days available for teachers to develop their teaching practice. This highlights the complex relationship between the individual spheres, in that a teacher's decision to abandon an attempt at learning a new technology would be influenced not only by their perceived personal ability, but also by their perceptions of how their professional needs will be met and

the quality of the support available to them. Each sphere plays a vital role in a teacher's calculations regarding the effort and value of utilising a new digital practice, they are not independent of one another, but rather combine to support the consideration of new practices. Friction caused within any one of these spheres would reduce the likelihood that teachers will intend to make effective use of a technology within their teaching.

Support systems do extend beyond technical staff, however, and schools are making increased use of wider internal expertise to meet CPD needs. Where schools have staff that are enthusiastic about technology enhanced learning this is proving to be an effective method of supporting DL CPD. The data collected in this thesis supports claims in the literature that there is an increasing trend in CPD moving to internal provision rather than externally-led opportunities (Goodall *et al* 2005). Due to the current financial climate for schools, as discussed in section 1.1, *aims*, internal CPD is being increasingly utilised as it is seen as more cost effective. By accessing the skills and knowledge available within the school, budget that would usually be allocated to buying in CPD or sending staff to external courses can be redistributed.

One of the most prevalent models of internal CPD being implemented within the schools of this study, is the digital champion strategy. Digital champions are designated individuals, often with an interest in digital technologies, who take responsibility for leading PD in relation to new classroom technologies and digitally literate practice. There is usually one champion per faculty or department. The main advantage of this role, is that it ensures that each subject area has someone acting as a role model and support for their colleagues. By ensuring context specific guidance for all staff, the likelihood of adoption of new techniques and tools is greater as the CPD they receive will have greater relevance to their practice.

The role of a digital champion, sometimes referred to in the literature as a technology steward, can take many forms, including:

- Understanding community needs;
- Awareness of technology developments;
- Making informed choices about technology selection and installation;
- Supporting the adoption of new technology within the community; and
- Integrating technology into everyday practice (Wenger *et al.* 2009).

Regardless of the focus on the digital, the champion role is 'not just technical activities, but *learning*: raising the awareness of community members, distributing skills, making connections, and thus creating new resources, rather than just consuming existing ones' (Whitworth *et al*. 2012, p.401). It is this community-centred approach, with a focus on practice over device that separates the role of digital champion from that of general ICT support and technician roles.

It is also highlighted that the digital champion needs to be from the community itself because of this focus on community need, only an individual from within the community can truly understand its requirements. It is this 'insider perspective that shines a very specific light on

the potential fit between community aspirations and technology' (Wenger *et al.* 2009, p. 25). This links back again to the crucial role that 4.3.1, *relevance*, plays in the PD of teachers. By having a peer in a facilitating role, the teaching and learning needs of the individual are understood, which may not always be the case for technical support staff. Participants noted that whilst their technicians were adept at dealing with the school network and hardware issues, they often struggled to provide support with issues relating to the use of technology to support specific teaching practices.

The champion model does rely heavily on the individuals who take on the role and there could be variation in the quality of digital champions available. It also increases the workload for the champions, which within the current climate for teachers, could be a major hurdle in getting volunteers to take on the role. The model also means that schools are restricted by the skillset of their current teaching body, and unless sufficient CPD planning is implemented, highlighting areas where expertise is missing and locating external sources of knowledge to counter this, schools could end up with a significant skill deficit in particular areas of practice. It was noted in 2.1.1.3, *CPD provision*, that whole-school coordination and planning of CPD strategy was a known weakness in many schools.

The ability to share resources across schools is one of the driving forces behind multi-academy trusts (MATs). As part of a MAT, a school has the unique opportunity of being able to access further sources of knowledge and expertise in the shape of colleagues at their partner schools. For example, where digital champions were utilised in all partner schools, when a school identifies a learning need that their own teaching body cannot address, they can enquire with their partner schools and potentially skill share between schools for little to no cost. The availability of other teachers from partner schools could also serve as a valuable learning community for digital champions, and their schools in turn, as it could create opportunities to develop ideas and share practices which could broaden the champions' knowledge base. This would also add further benefit to the role for the champions themselves.

Schools within a MAT would also have the potential to pool monetary resources to pay for CPD across their partner schools. By teaming up to purchase a programme for all of their staff, it could make accessing more expensive CPD more affordable. In relation to technology-focused practices, it could also reduce the cost of software and site licenses, as discounts are often available for multiple purchases. It may also be possible to bring staff together from across a MAT for CPD, so as not to need multiple sessions, requiring multiple payments. It can be seen that there a number of possibilities for schools within a MAT to take advantage of their position. Whilst the Government seeks to increase the creation of MATs across the country, however, there are still a significant majority of Secondary schools 64 per cent in the UK that are not part of a MAT: 31 per cent local authority schools, 26 per cent academies outside of MATs and seven per cent of other schools such as free schools, studio schools or university technical colleges (DfE 2017).

So whilst there are many potential benefits for schools within MATs, we must question how the Government seeks to provide equal opportunities to the schools outside of this system. At present, it would appear that this inequality is not being addressed and given the

Governmental push for more and more schools to become academies, and in turn to join MATs, it is a realistic concern that schools outside of these networks will be pressurised to convert via the advantages available to MAT schools. This would serve as a powerful encouragement given the simultaneous reduction in school funding currently underway (Baisley 2017a). Regardless, whilst the majority of schools still sit outside of a MAT, it is the ideal time to consider how non-MAT schools can support one another.

This thesis is not in a position to suggest solutions to the financial constraints that schools currently find themselves in. It can, however, raise awareness of some of the ways in which teachers and schools may be able to work together to share practice and offer support. Increasing awareness of these external networks may be of great benefit to teachers. A few examples include hub-and-spoke groups, TeachMeets and online communities, which are discussed below.

The hub-and-spoke model is a practitioner-led collaborative subject network. In principle, each subject area has representation with one teacher taking responsibility for running the hub and other teachers, from a range of local schools, meeting together to share practice. Working with local schools in this way increases variety of knowledge and the chance of relevance to participants, without having to rely on school partnerships or solely internal capability. In the role of hub, an individual or school takes the central controlling role of the network's activity, co-ordinating spoke members (Hadfield and Chapman 2009).

In practice, however, the availability of hub groups depends heavily upon an individual or school volunteering to take responsibility for the group. The hubs can also become side-lined by other, however well-intentioned, community groups. For example, amongst the schools in this study it was noted that they 'lost the ICT hub because it got subsumed by the ICT Strand of BSF' and was then subsequently lost when the programme ended (Focus group, S2T15).

Alongside practitioner-led networks, there are also a number of practitioner-led CPD events, such as TeachMeets, which run up and down the country. These are usually locally organised and structured around a particular theme – this may be subject specific, location specific or linked to specific types of practice such as technology-enhanced learning or special educational needs support. The events take the form of conferences, with each presenter having between 5-7 minutes to share an element of their practice. They are intended as short and sweet introductions to real teaching practice, to raise awareness of a variety of techniques and give attendees enough information to be able to decide if the approach might work for them. They can then go away and look into it more if they wish to do so.

TeachMeets were noted on a number of occasions throughout this study, with staff noting the value of receiving lots of ideas, of knowing they were successful practices and of having another teacher share them. This links back to the discussions in 5.1 *emerging theory*, and the value of relevance and evidence of success, to Teachers' DL CPD.

> '*…one of the most effective ones we went to, when we went to a TeachMeet in London, it was a man who was stood up there and actually gave us loads of software that*

they'd used, wasn't it? [directed at D2], and literally just went for it, really gave us a snapshot: "this is useful because, this is useful because, use this this way". And actually, because he didn't have a vested interest, he'd gone through and cherry-picked what worked well in a classroom.'

(Focus group, S2T8)

Teachers also valued the wider social benefits of attending such events, as it provides informal time for teachers to meet, chat and share with their peers. It is this sense of togetherness, within an informal, laid-back setting that brought together the first TeachMeet event (Hallahan 2010). As a teacher-led event, it can also be adapted to suit the specific local context, in both content and form. As McIntosh (cited in Hallahan 2010, p.1) notes, 'the evolutions of it are essential to continuing to survive, otherwise it becomes irrelevant'.

As with many elements of teachers' CPD, there is a substantial onus on the teachers themselves to build and maintain these systems and support networks. What is needed, as suggested earlier in the review of the literature, is a national strategy for DL to offer support and guidance to teachers and to help them lessen the burden. In this way, teachers can continue to lead their own PD, without increasing their existing workload, and with additional expertise on hand where needed. A critical question that arises, then is: how can teachers' DL development be encouraged, without placing the onus of development solely upon the individual?

6.4 The cultural sphere

Research has shown that social influences are particularly powerful within the schooling environment (Sugar *et al*. 2004, Opfer *et al*. 2011). This may take the form of admired colleagues modelling good practice or senior staff making the importance of technology across the setting clear. Senior leadership have an important role to play in being explicit about the role of technology within teaching practice, if they wish for it be effectively used. How DL is viewed by leadership has a significant impact on the integration of technologies into everyday teaching. If staff perceive their leadership to not value DL, it can negatively affect their own view on it, even if their own personal feelings differ from this. Just as cultural influences can encourage staff to take up practices they do not personally value, it can also stifle personal interests and creativity. The literature also highlighted the role of leadership as crucial to effective CPD (Cordingley *et al*. 2015, Guskey 2003, Stoll *et al*. 2012). This was most often raised by participants when teachers felt that their school did not adequately value digital practices, thus corroborating the importance of senior leadership encouragement.

'*Obviously if they're not big on ICT themselves perhaps they don't appreciate the thought and the effort and the skills that went into developing that piece of work and the time, you know, and the energy and all sorts of things. You know we've got people in the school who are fantastic with technology but, you know, if you think about how they are viewed by leadership then it's not very highly actually…*'

(Interview, S7T1)

A lack of encouragement from SLT was seen as a negative, and in some cases teachers continued to push for greater DL independent of their SLT. For those with a role supporting colleagues, it was certainly felt that other staff would be more open to using technology if the school's senior leadership were explicitly encouraging of such practices. Since the new Standard for teachers' professional development note the importance of leadership prioritising CPD, this may add extra impetus for school senior leaders to be more openly advocative of digital practices. A national strategy for DL would give additional weight to this driving force. Where concerns of leadership were not discussed, the school had a strong digital CPD culture, it is likely that since there was no issue perceived, it was not mentioned.

As well as influencing teachers' perceptions of their professional identity, school culture has also been found to have a direct impact on teachers' attitudes to learning (Opfer *et al.* 2011). Where teachers believe that PD is valued and where it is modelled by senior staff, individuals are more likely to think positively about CPD and engage with opportunities that arise. A school culture of collegiality promotes an atmosphere of learning that is supportive and reciprocal among staff (Fielding 1999). The opposite is also true as 'features of the social setting constrain or afford particular practices associated with learning and thereby constrain or afford the learning itself' (Greeno *et al*. 1996, p39). This was illustrated in the data, when one participant observed that developments with technology did not appear to be valued by senior leadership:

> *'…if someone goes away and comes up with a great teaching and learning tool then that's good for them and everyone gets very excited about it but, you know, if someone goes away and does something with ICT, it often goes unnoticed or is not valued in terms of, you know, the worth that leadership and management put on these kinds of things*'
>
> (Interview, S7T1)

This participant also recognised that encouraging colleagues to engage with DL CPD was a challenge. Further discussion identified that the participants' colleagues had noticed the lack of encouragement and value placed on DL by their SLT and so did not place any value on those practices themselves. If the school wish to improve the DL of their staff, the first step will be to create an environment in which DL is explicitly valued.

Opfer *et al*. (2011) note that whilst an individual teacher will decide for themselves if they wish to engage with PD the culture of the school, as demonstrated by the resources available to support learning and the encouragement to do so, will ultimately determine if the PD is successful. In order for schools to foster an environment in which all staff are positive about PD, school leadership must establish a culture that values continual learning and development. This can be achieved by communicating a clear vision for PD across the institution, providing adequate support for professional learning, auditing expertise to highlight strengths and weaknesses across the staff body and supporting networking of staff where internal support can be established (Pedder 2006).

School-level beliefs are important because they pave the way for school-wide social norms, which can have a significant impact upon an individual teachers' judgements about the value of a particular practice, tool or area of development (Sampson, Morenoff and Earls 2000). If the individual teacher's views do not align to their wider school beliefs this can result in them feeling disillusioned with their own PD or underappreciated if they strive to continue alone. Where they do correlate, this can strengthen the individual's drive for developing their practice and increase their sense of collegiality with peers.

The belief system within a school is not as influential as the actions school leadership take and the example that is set across the institution; 'it is more important to consider what schools "do" than how they "are"' (Opfer *et al.* 2011, p.209). If a school purports to support PD in a particular area of practice, but then offers little in the way of guidance or resources to teachers this sends a clear message about the true value of those practices to the school. Also, without adequate systems of support in place that provide structure and coherence to teacher PD, lasting change is less likely to occur. Instead, schools end up with what Leithwood, Aitken and Jantzi (2006, p.34) refer to as 'many but small changes', small pockets of CPD across the school that do not align or have no overarching direction. These small changes could also result in valuable CPD work being overlooked or missed by staff who would greatly benefit from it.

The technology acceptance literature suggests that social influence is at its most potent within an environment where technology use is mandatory, however, this may create some tension within a school environment. The literature notes that when school culture encourages technology use, and this is reinforced by an institutional mandate, an individual will be most likely to engage with new technological practices. To put this more simply, expectations + sanctions = compliance. Within this context, a teacher would be making use of technology to support their practice, not out of a belief that the technology can enhance the learning experience, but out of a desire to perform to expected targets for fear of repercussion. This approach could also stimulate teachers to oppose the system entirely, resulting in disillusioned staff. Situated within the wider performativity of teachers' professionalism, this kind of negative reinforcement of new practices only serves to increase the pressure, stress and tension in a teachers' professional identity.

Professional development that is enforced in this way reduces a teacher's work 'to a form of performance, in which what counts as professional practice boils down to satisfying fixed and imposing judgements from outside' (Ball 2005, p.2). Rather than effective CPD, which supports the individual in moving forward with their professional practice, this would result in what Evans (2011) refers to as enacted professionalism, where the teacher performs required practices as demanded by external forces, despite maintaining personal notions of professionalism that are not being met. It is crucial that teachers drive their own PD, with the necessary support and resourcing from the school, to ensure that CPD programmes are relevant to teaching needs. Research in this area has also concluded that CPD which supports staff in developing their own knowledge is 'most likely to lead to transformative change' (Fraser et al. 2007, p.167). Given the increased focus on managerialism, performativity and the market, teachers are under increasing pressure 'to organise themselves as a response to

targets, indicators and evaluations' (Ball 2003, p.215). Existing workload is a particularly important consideration within teaching, as teacher workload has grown significantly in the past decade, with an accompanying rise in work-related stress and concerns over teacher retention (Iris connect 2016).

Whilst it has been shown that SLT have a significant influence on school culture, the data from this study also shows that participants were very aware of fellow teachers who made effective use of new technologies, demonstrating the importance that all staff play in an individual's perception of school culture. It was noted in 4.2.4, *school culture* that teacher professionalism appeared to be heavily influenced by the wider school context within this study. Whilst the schools tended to discuss professionalism in very similar terms, where they differed was often directly related to their school's culture and how this impacted on views of what being a professional means. For example, in a teaching school, participants noted the value of achieving qualified teacher status (QTS) and modelling effecting practices for colleagues; in a specialist provision school for children with behavioural needs, participants highlighted the importance of acting as a role model for students and being a stable adult in their pupils' lives; and, in an SEN school, participants felt that enabling participation and equal opportunity were key to professional practice.

The links here between the wider school context and the individual teachers' perception of professionalism are clear. The participants did not make these links explicitly, this was a theme that emerged during analysis of their responses. Prior research in this area has also found that teachers' perceptions of professionalism are very personal and most often implicit, meaning that they can find them hard to vocalise (Helsby 1996). Regardless, whether explicit or not, the influence of their wider school culture could be found in participants discussions, and also in their later retellings of CPD experiences or daily classroom practice, where they continued to note these principles, but as practices rather than beliefs.

The relationship between school culture and professionalism is supported by the literature, which develops this point further, adding that departmental culture in particular can have a significant impact upon teachers' sense of professionalism (Talbert and McLaughlin 1994). The role of the department was not explicitly highlighted by participants, though as discussed above, teachers' vocalisation of their practice can be highly implicit. Existing research has shown that the values and attitudes of individuals within a department have the potential to promote or inhibit professional confidence, directly 'influencing what they do in the classroom' (Siskin 1994, p.69). Of particular interest, were the examples provided from The Professional Culture of Teachers and The Secondary School Curriculum' study in which four vignettes were presented,

> the latter two examples, from Mary and John, both reported increased collegiality, enhancements in teachers' sense of professionalism and professional learning, whilst the experiences of Anne and David pointed towards teacher isolation and blockages to teacher development associated with hierarchical and bureaucratic management.
>
> (Helsby 1996, p.145)

What is not discussed, however, is the fact that in these scenarios Mary and John are the Head of Department, whilst Anne and David are subject teachers. This highlights the importance of the role of Head of Department, not only for conducting performance management reviews and deploying school-wide CPD initiatives, but also for fostering an atmosphere of professional learning and collegiality within the department. It also suggests that CPD strategies such as digital champions, that give certain individuals the responsibility of encouraging CPD in a particular aspect of teaching, have the potential to have a significant impact on departmental attitudes and practices. Helsby (1996) observes that whilst the department is not the only community in which a teacher works as they may also have membership of curricular groups or subject associations, the department is a community that *all* teachers are a part of. It could be seen, therefore, as the foundation for a teacher's participation in wider professional communities and so the environment created within the department will be key to shaping the beliefs, behaviours and norms that individuals expect of the teaching profession outside of their own institution.

As well as physical professional networks, there are increasing opportunities for teachers to engage with one another via online communities of practice. Through engagement with online networks, teachers are exposed to a far wider variety of practices and ideas that may not be available within their local school communities. Online networks also have the advantage of working asynchronously, meaning that teachers can dip in at a time, and from a place, that suits them, rather than having to adjust their existing timetable to make time for travel and scheduled events. The increase in online professional networks strengthens the argument for developing teachers' DL, as a certain baseline of knowledge and confidence is required to engage within these communities. By supporting teachers in developing their DL, they are also opened up to opportunities such as online professional networks and the additional benefits these can bring to their teaching practice.

Staff identified using a range of tools and services to support their engagement with online communities, including: social networking sites, professional forums, video sharing platforms, resource sharing platforms and online courses. Teachers were most interested in the ability to access information and resources that could support their own practice. The ability to 'follow' other practitioners on social networking sites was also seen as a particularly useful feature, as it increased their awareness of other teachers' practices and current teaching trends and knowledge. Following other teachers with whom they shared a topic or specialism also meant that they were able to 'pinch ideas … and then try to share…' them with colleagues, in the knowledge that they had been trialled within a similar setting (Interview, S3T1). As noted in 6.1, *the professional sphere*, the relevance of CPD sessions and resources is highly valued and using examples from other teachers is seen as a way to improve the likelihood of information being relevant and useful.

Social networking sites were also used to promote DL PD. One school in particular made regular use of a school hashtag, a tag that links multiple posts across users, for teachers to share their progress and the practices they were employing in the classroom so that other teachers within the school could find it. By tracking the posts shared, the teacher responsible

for digital learning at the school was then able to monitor progress and target support where needed. Teachers within smaller communities, such as specialist provision and non-mandatory subjects also found that social networking sites provided a space for them to share with other specialists in their discipline, creating a community across a wide geographic area.

Finally, the range of services used by the participants covered a variety of formats for information and resources: video, audio, conversational, written, etc. This suggests that the internet is able to support teachers in accessing information and resources in the format that suits them best for learning. Again, however, at least basic DL is required to support an individual in navigating the myriad of websites offering such services. Without sufficient support, teachers are missing out on potentially useful sources of PD.

These examples demonstrate how norms can still hold significant influence over an individual's practice when shared online rather than in physical communities and spaces. The 'interconnected nature of social media enables individuals to be exposed to others' behaviours' (Kim *et al*. 2015). It is interesting to consider the degree of influence these communities have on individual teachers, and how those cultures interact with the individual's local school culture. It was noted that those teachers who did not feel a part of their local school culture, engaged more heavily with online communities.

When looking at the role of social norms and engagement with social networking, Kim *et al.* (2015) found that norms held a stronger influence on behaviour than attitude toward practice. This suggests that even when the social pressure is coming from an online source, an individual will be encouraged to participate in those practices, even if only to keep up appearances with their online network. Within an educational context, this would place great importance on the role of teachers' online learning networks and they influence they hold over one another's practices.

It should be noted, however, that engagement with these communities is most often during the teachers own time. This creates a conflict as whilst these resources can be beneficial, they also add to a teacher's already demanding workload which could result in them feeling pressured to give up their personal time to engage in this kind of CPD. As one participant noted, linking back to 4.1.1 *conflicts of interest*:

> '*The problem is you've still got exactly the same problem that you'd have with any other CPD - you have to find time. ... If you're not careful, we're all in a position where we do a very vocational job, you know, I think it's safe to say everyone sitting around this table goes above and beyond in the nature of the environment that we're working in - so there are times when you just have to switch off. Particularly when you've got your own family, and that's something I've struggled with at various points over the last couple of years, it's going - do you know what this switch has to go off so I can actually spend time sat with my kids - playing on the Xbox with my children, talking to them about what they did at school. Rather than coming in going "right, you lot are going to bed now I need to sit down and do some work and do an online course"*.'
>
> (Focus group, S1T11)

Again, the onus here is on the teacher to be responsible for finding the time and resources to develop their own practice. But within their existing workloads this time simply does not exist. What needs to be considered is how DL CPD can be driven to ensure that support is generated for teachers so that they are not having to sacrifice their own time and resources. A national strategy for DL could be one way to accomplish this.

6.5 Framing support for digital literacy professional development

Reviewing the data from this study has identified a number of areas where greater support could be offered to teachers and schools in developing teachers' DL. This thesis postulates that the Teachers' Digital Engagement Framework could also be used to help frame adequate support, by considering teachers' learning needs within each sphere. As each of the spheres plays an important role in a teacher's technology integration, considering each in relation to a new CPD programme could help schools and CPD providers to design and implement CPD that has considered the elements of a teachers' working life that will most greatly influence their readiness to take on a new practice.

The support needed in each situation will differ, as each school has its own unique culture and student body. Below, the findings from this study have been used to demonstrate how the four spheres can be used to frame support for DL PD.

6.5.1 Supporting the Professional sphere

The professional sphere highlighted two primary concerns for the teachers in this study. Firstly, the too much of their DL CPD was generic and decontextualised. Too often, teachers were simply shown the functional basics of a device or software system and were not shown how it could be used effectively to support pedagogy. Professional development that takes place outside of the context in which it will be used is a national issue and this further complicates the presentation of DL CPD which focuses on functional skills. Teachers from the humanities and non-mandatory subjects in particular felt that they were underrepresented in DL CPD opportunities and this greatly affected their use of digital practices. Secondly, teachers' existing workload restricts the time they have available to engage with DL CPD. Without any guidance on where to find reliable sources of CPD, many teachers do not know where to turn. They are interested in engaging with evidence-based practice, but do not know how to begin.

Professional sphere	*Understanding how professional needs can be met by a digital practice*	Presenting educational research in the form of case studies
		Championing the use of practitioner briefings in educational research

In order to support teachers within this sphere of their PD, access to information about the potential of digital practices needs to be increased. It should be presented in an easily navigable manner, so as to alleviate additional strains on existing workloads. Given the value

of relevance and evidence of success from other education practitioners, case studies would be a beneficial way to share education research. These would provide detailed examples of practices, as conducted by practitioners, alongside the impact and outcomes. Additionally, Universities should support more research that partners with schools with teachers as researchers, rather than just as participants. In this way, the teachers could help to design research that responds to the needs of the teaching community, and Universities could engage with research that has a higher chance of creating impact. The teachers in this study highlighted the value they place on learning from other teachers, so supporting more schools to engage in research would increase its relevance. A knowledge base of evidence-informed-practice devised by educators and researchers in partnership would support teachers in making informed choices for their own practice. This is the principle behind the Government's plans to create an online platform of evidence-based practice (Goldacre 2013; DfE 2015).

This was also the driving force behind the funding of access to over 2,000 educational research journals and ebooks for members of the Chartered College of Teaching (DfE 2014, Chartered College of Teaching 2017). Whilst this access is valuable, and a good start, merely opening the door for teachers does not support them in navigating through the vast library of research available. It will instead further increase the workload burden for school teachers as they are required to learn how to navigate journal databases, how to formulate effective search terms and how to identify articles of true relevance and value to their needs.

A multimedia approach could offer additional support, for example through video entries of peers discussing their practice and approach as, particularly in relation to educational technology, it is useful to see a practical demonstration of a new system before attempting to implement it yourself. There may be opportunities here to engage with Open Education Resources (OER) to support teachers' PD. By creating CPD resources that 'have been openly licensed or are in the public domain, and can be used or reused for free', the benefit of such resources can be spread much farther (Haßler *et al*. 2014, p.7). For schools or higher education, this would mean that resources created as part of PD projects would be greater value for money as they could be shared to more practitioners, to greater impact.

When the Government do create their online platform it should be consider how they can help teachers by signposting the research that might be valuable to them. An effective way to support teachers in engaging with education research articles, would be to encourage more journals to request a practitioner briefing as part of the article abstract, as is already the practice of the British Journal of Educational Technology (BJET) and British Educational Research Journal (BERJ), among others, through practitioner notes. These summarise the key points of the research and, in the case of BERJ and BJET, situate them within the associated literature and consider their impact on practice. Universities can also play a role, through services such as The University of Bristol's Document Summary Service (University of Bristol 2018) which provides summaries of key research and educational policy in the form of monthly digests. Initiatives of these sorts support teachers in engaging with current research on effective practices in a way that also allows them to save time and ensure relevance to their teaching needs.

6.5.2 Supporting the personal sphere

The personal sphere identified two key issues for teachers developing their DL. Firstly, that self-efficacy had a significant impact on willingness to experiment with a new digital practice, despite perceptions of ability not always being reliable. Part of the issue here may be the lack of guidance for educators on how DL translates into classroom. Without a shared terminology for digital practices, teachers may be uncertain of how their current practice reflects that of digital practice. Secondly, it was felt that digital practices required a heavily initial investment in terms of time and resources. Even when teachers could see the potential long-term benefit of the practice, they were still reticent due to initial investment needed. This included sourcing and booking of equipment, learning how to use the technology necessary, teaching students how to use the technology necessary and reflecting on its appropriate use.

Personal sphere	*Understanding how existing digital literacy will support engagement with new digital practice*	Supporting staff self-evaluation and reflection of digital literacy
		Encouraging initial engagement with new technologies through gamification techniques

Misconceptions around ability could be countered through the use of self-reflection and evaluation. The DigiLit Leicester project, introduced in 2.3.3, *existing professional development for digital literacy*, is one example of such a self-evaluation framework that could help to support teachers in identifying their true skills and knowledge. The framework helps to translate the notion of DL into recognisable teaching practices, which offers the chance to support staff not only in identifying their current skills and confidence, but also in potentially highlighting new practices that staff were previously unaware of. By supporting staff in engaging in this kind of reflective process, schools could help their staff to identify their true level of DL and in turn highlight where additional support can be deployed within the school.

Should teachers be concerned that the framework may be used to audit their skills, the content of the framework could be used solely to spread greater awareness of what practices constitute DL in the Secondary school classroom. Professional development opportunities within a school could focus on one strand of the framework at a time, working across departments to explore how that element of DL could be utilised within their own practice. In this way, they are benefitting from the framework as a way to extend their practice, without feeling that they are being judged for their existing ability.

It was noted in 6.2, *personal sphere*, that first impressions have a significant impact on assumptions around a new technology and this places great importance on a teacher's first encounter with a new digital practice. One way to support teachers through the initial learning process would be to take inspiration from video game design, as it is also concerned with the development of digital skills. There are similarities between learning a new gaming system and learning to use a new piece of technology within teaching practice, so the onboarding metaphor is a useful one in this situation. When learning a new video game, it is designed to ease you through the process and by introducing the controls gradually and within the context

that they will be used. The game often breaks down an overall goal into smaller objectives and takes you step by step through each, giving feedback when challenges are encountered. Another critical element of games-based learning is that skills are learnt within context. This was identified as a major barrier to DL CPD, as devices and software were often learnt outside of their teaching context.

The motivational elements of video game design can also be utilised to increase motivation for engagement with DL CPD. Whilst onboarding techniques can support teachers who struggle due to a lack of technical confidence, gamification is designed to support those with a lack of motivation to engage. This may not always be due to a lack of interest on the individual's part. As the participants in this study have shown, it is possible to be aware of the benefits of a system but still unable to make the time to embed it within ones practice, particularly if the process of embedding appears longwinded. Gamification is 'the use of game elements and game design techniques in non-game contexts' (Werbach and Hunter 2012, p.26). It primarily utilises competition and reward features, such as points, badges and levels.

Professional development should be approached in the same way. Just as a video game takes you on a journey through the functions and mechanics of the game to get you started, CPD should be designed in such a way as to lead individuals through a new programme, device or practice to ensure that they are familiar with the basics before introducing new concepts and applications of those features. It does, however, require significant planning to implement video game design into a classroom context and this is something that schools would need time, resources and support to achieve.

6.5.3 Supporting the Environmental sphere

The Environmental sphere established two prominent concerns in relation to participants' support systems for DL CPD. Firstly, that teachers are lacking in support specifically in relation to their application of digital practices. Due to financial constraints, technical support was not available to teachers on a daily basis and this greatly affected their inclination to take a risk on a new digital practice when support could not be guaranteed. It was also noted that there was no local support role that could bridge the gap between technical and pedagogic knowledge. Secondly, that whilst schools were working efficiently to meet the demands of the Governments self-improving system vision, there are limitations to such a system. The popular digital champion model of DL CPD relies heavily on skilled individuals across a school. Where the champions are lacking in knowledge, the school must find other ways to support staff in these areas. Similarly, whilst the Government claim that MATs can support one another in addressing gaps in knowledge, there is still a significant majority of schools outside of these partnerships and no current strategy to support their development.

Environmental sphere	*Supplying adequate support systems to encourage digitally literate practices*	Exploring the roles of Learning Technologists and Digital Champions in schools
		Examining the potential of school CPD partnerships

A proposed response to the first issue would be to create a role within schools that bridges the gap between technical and pedagogic support; a learning technologist role. Learning technologists are individuals 'who are actively involved in understanding, managing, researching, supporting or enabling learning with the use of Learning Technology' (ALT, 2017). The role is common within other education sectors, such as further and higher education, though has yet to trickle down to compulsory schooling on a large scale. The role of learning technologist is primarily focused on curriculum development (Oliver 2002). Support is provided through extended projects aimed at enhancing a particular element of learning, and tend to focus on the learning outcomes rather than the specific technologies used. Within H.E. learning technologists are often responsible for specific faculties or departments, so as to ensure that the advice and guidance being provided is appropriate for the teaching needs of the lecturer. This would also align well with need for relevance of teachers' DL CPD. The learning technologist role has been trialled within compulsory schooling, though there is no documentation of this. An in-depth study of the role within a compulsory setting would be a great value, to investigate how the role could support DL CPD. This would then be disseminated to support other schools in implementing the role.

Whilst the learning technologist role would help to create a new position of support within schools that ties technical knowledge to pedagogic understanding there is still the greater issue of relevance in teacher's PD. It has been noted previously that the decontextualised natured of teachers' DL CPD was a concern to many of the teachers in this study. These findings support PD initiatives such as Digital Champion schemes - where teachers, usually one from each department, take on the responsibility of promoting and supporting DL practices and development within their subject area. This is the primary difference between learning technologist and digital champion roles. Where the former is an independent role, able to make connections between technology and pedagogy, the latter is primarily a teacher who also shares practice to support subject-relevant DL CPD. In this way, teachers have access to a colleague within their department who can support them in understanding how DL relates to their subject. There are already examples of these roles within some schools, so in keeping with the recommendations made previously, it would be of great value to the education and research community for case studies to be conducted examining the effect of Digital Champion roles on teacher's DL, so that these can be disseminated to more schools.

The complication here is that the most likely solution to these issues is the creation of new roles. When schools are experiencing a national funding crisis, it is unrealistic to assume that new roles can be created, even when schools need the support that they can offer. This presents another argument in support of a national strategy for DL, one that seeks to include the creation of new roles within schools to support DL CPD.

6.5.4 Supporting the Cultural sphere

The social sphere revealed two issues related to teachers' DL CPD and professional cultures. Firstly, that senior leadership and, in particular, heads of department have a significant impact upon local school culture and individual teachers' technology integration. Within the

performativity culture of current schooling, there is a tension between school culture to encourage and support, collegiality, and school culture to enforce and pressure, conformity. Secondly, online professional networks and communities have opened a new space in which teachers can interact with other practitioners. This creates a new interplay between the cultures within their physical community and those within their virtual community. These communities can create many opportunities for PD, but they also require a basic level of DL in order to participate, meaning that a specific demographic of individuals are excluded from that community.

Cultural sphere	*Fostering a positive digital learning environment*	Providing further training and support to SLT and HoD for facilitating digital learning
		Investigating the role of online professional networks in technology adoption

Given the important role that senior leadership play in setting an example for PD, it is important that they too are supported in developing their DL and in learning to cultivate positive digital learning environments. This study has shown that departmental culture may play an even stronger role in teachers' technology integration, placing great responsibility on the head of department for supporting and encouraging DL CPD. It is unsurprising that departmental culture should play a vital role, considering that relevance and relation to a teacher's subject and specialism is such high value. Again, Heads of department should be offered training and guidance on supporting DL development. Examples and case studies from successful schools would be a useful resource in this process.

It is also important to acknowledge that teachers' professional networks extend beyond the physical school environment with the advent of social networking platforms. Additionally, there has been a rise in recent years of informal teacher-led PD events such as TeachMeets, conference style gatherings where teachers give a five-to-seven minute presentation on one element of their teaching practice that works. The Government's Standard for teachers' professional development (DfE 2016) categorises this kind of activity as indirect PD and gives little thought to its processes or value. Given the increase in engagement in this kind of community driven DL CPD it is important to consider not only the effectiveness of these approaches in relation to PD needs but also how these communities impact upon local school cultures and the role that they play in an individual teacher's technology integration.

6.7 Chapter Summary

This chapter has utilised the Teachers' Digital Engagement Framework, as developed in the previous chapter, to explore the data collected in this study in more detail. The professional sphere identified the importance of relevance to teachers' DL CPD and the constraints experienced due to existing workloads. This was exacerbated by teachers lack of awareness of the technologies available to them and the perception that digital practices require more time and resources to learn to use effectively. The personal sphere highlighted the influence of teachers' self-efficacy and their engagement with new digital practices. The impact of

assumptions and first impressions of new technologies was found to be of importance and this was complicated when teachers lacked basic technical knowledge. In these situations teachers believed practices to be more complex than in actuality.

The environmental sphere revealed the importance of support roles within a school, for underpinning teacher DL CPD, and the barriers that are created when these roles are reduced. Of particular interest was the current gap in many UK schools between technical and pedagogic support for teachers. Whilst technicians provide a valuable support role, they are not intended to be teaching experts and so often cannot support the pedagogic application of technology in the classroom. Finally, the cultural sphere revealed the effect of SLT and HoDs on school and departmental culture, and in turn, teachers' technology integration. The role of social networks and the online communities these create was also considered, in terms of how they might support teachers who do not have a strong local support network.

Having considered the data within this study in more detail, the Teachers' Digital Engagement Framework was then also used as a framework for reviewing the support structures in place to aid a teacher in developing their DL. The data from this study was used as an example, to demonstrate how the Teachers' Digital Engagement Framework may be used in this way. Therefore, specific recommendations were formulated for this study, though some may be of wider benefit. The following chapter will examine this further.

7. Conclusion

> The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.
>
> - Sir William Henry Bragg

7.1 Summary of research

This thesis has taken a constructivist grounded theory approach to explore secondary school teachers' DL PD. The study began with a review of the literature which highlighted a number of themes around the foundational concepts of the research: professionalism, PD and DL. Since the Conservative Government of 1979, we have seen a significant increase in Government intervention into matters of education and teachers' professional status. In lieu of a strong voice from the community itself, the Government have taken it upon themselves to define what professionalism means for teaching and education. This has led to a significant shift in the focus of teachers' professionalism, from the traditional views of duty of care, professional autonomy and a strong theoretical knowledge base, to a managerial professionalism primarily concerned with delivery of content, success in the wider education market and teacher accountability. These changes have been supported by successive Government policy, resulting in a view of teachers as technicians and performers, rather than educators and facilitators.

A review of PD in the UK demonstrated how the Conservative Government's hands-off approach has impacted teachers' CPD. By removing the bodies responsible for supporting schools and individual teachers in their CPD, and opening up provision to the market, the Government created a fragmented system with no coherence. Schools and teachers have no support in ensuring that providers can deliver high-quality CPD to their staff, and quality assurance is also an issue for the procurement of CPD resources. This is particularly an issue in relation to education technology, as schools must invest wisely in devices, software and their developers with no guidance on how to evaluate their current and future needs effectively. During data collection, a participant reflected on an old colleague's thoughts in relation to this and it is an apt metaphor.

> 'It's like rowing across the Atlantic, and you're rowing across the Atlantic because somebody's told you that that's what you can do, this is the boat you've got and do it - and then all of a sudden this cruise liner goes past you and you go 'what I could have had one of those?'. Because you don't know what you can actually do unless somebody starts showing you ideas.'
>
> (Focus group, S1T11)

Finally, exploration of DL within the context of Secondary school teaching acknowledged the complicated nature of DL for teachers. The value of teachers' ability to think critically and creatively about the use of technology was also highlighted, and how this can support today's learners. Whilst young people may be strong consumers and communicators, they often lack

critical thinking in relation to technology use (Hague and Payton 2010). Investigation of existing examples of DL CPD showed the importance of allowing staff time to implement CPD into their current practice; the value of collaboration with other institutions; the importance of engaging with open practices in order to share best practice most widely; and, that all staff, regardless of initial confidence level, can develop their digital practice.

Data were collected through focus groups, interviews and observations from a total of nine schools, representing mainstream, SEN and specialist provision schools. The analysis highlighted seven prominent categories within the data:

- Barriers to CPD;
- Professionalism;
- Learning needs;
- Positive elements of CPD;
- Support systems;
- Use of Web 2.0; and
- CPD strategies.

These were accompanied by an emerging theory surrounding the context within which teachers are currently working, and the impact this has had on their engagement with DL CPD. Namely that an increase in non-teaching workloads, as a result of accountability measures within schools, has left teachers with little time to consider their PD. Given the reduction in time available for DL CPD, teachers are forced to make tough decisions about the extent to which they develop their DL.

Four primary spheres of concern were identified within the data, found to influence teachers' decisions regarding engagement with DL CPD, and these were synthesized with an existing technology integration model to create a framework that could provide explanatory power relating to teachers' digital practice, without steering the focus away from the individual and their needs. The developed framework was then used to explore the data collected in more detail, creating a rich picture of the phenomenon.

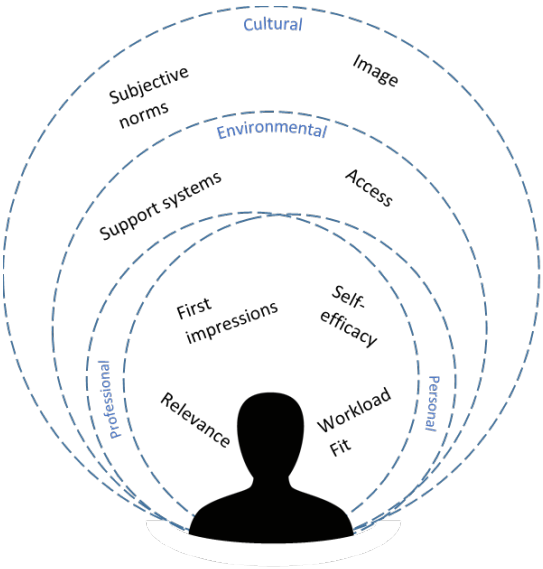


Figure 7.1 Teachers' Digital Engagement Framework

Having considered the findings in more detail, the framework was then used to identify how support could be tailored to the needs of the participants. This demonstrated the flexibility of the framework, as both an explanatory and support framework. Finally, recommendations were generated, both in support of the schools who participated in the study and for the wider education sector. The overarching recommendation of this study is the need for a National Strategy to support DL. With guidance available nationally, schools would be better placed to understand how to support the development of their staff DL.

7.2 Research evaluation

The evaluation of this research was conducted using the criteria for grounded theory evaluation as presented in the methodology chapter, 3.6.2 *grounded theory evaluation*. To recap, Charmaz (2014) identified four key criteria which should be met by a grounded theory study: credibility; originality; resonance; and usefulness. To support the researcher in conducting the evaluation, Charmaz (2014) devised a series of questions for each of the criteria, to aid reflection on the research. These can be found in figure 3.11, *constructivist grounded theory evaluation criteria*. The result of these reflections is presented below.

7.2.1 Credibility

Through the implementation of interviews and focus groups the researcher gained enough knowledge of the setting to be able to understand the words and meanings of the participants. Conducting observations added further experience and understanding of the setting in practical terms. This was underpinned by the researcher's prior familiarity with the setting, through previous research work. Therefore, whilst the researcher cannot claim to have as thorough an understanding of the setting as their participants, extended engagement in the field has resulted in sufficient familiarity to aid data analysis and the generation of theory from the data collected.

Throughout the course of the thesis, data have been collected from a total of nine schools and 64 individual participants, including the pilot study phase of research. A mix of focus groups and interviews were conducted to suit the convenience of the schools, with observations in two schools used to generate further data for the purposes of triangulation. Through the process of concurrent data collection and analysis, and the favoured analytical approach of constant comparison within the grounded theory approach, data collected within each school was compared and reviewed against that previously collected. This was illustrated to the researcher's supervisors during the audit phase of the project (see Appendix H).

The audit documentation also served as a record of the analysis process, presenting the work that the researcher conducted in order to generate the emerging themes from the data collected. This documentation was created using memos that were written throughout the research process. Inclusion of this documentation as an appendix to this thesis, along with the quotation excerpts presented in the findings chapter (see 4.1 *Barriers to CPD* through 4.7 *CPD strategies*), provides the reader with the necessary evidence to formulate their own conclusions. In support of this, only the categories which relate to content from all seven schools in the main collection phase were included in the findings chapter.

7.2.2 Originality

The categories and consequent themes derived from the data present the realities of a teacher's professional context. Whilst this will not be new to teachers themselves, for those outside of compulsory education this representation of teachers' working lives will be of interest. The overarching theory presented in the previous chapter offers a new understanding of the issues surrounding the continued failure of educational technology developments.

This thesis can be seen as empirical evidence to support the growing discussions around teachers' PD, as well as their workload and retention (IRIS Connect 2016). By highlighting a key issue in the implementation of digitally literate practices in the classroom, this thesis created the opportunity to consider teachers' technology acceptance from a new angle. By interrogating the data through this lens it was possible to consider how the technology acceptance literature could be used not only as a predictor of behaviour but as a support mechanism.

7.2.3 Resonance

Through the use of member checking the researcher was able to ascertain the extent to which the core categories within the data related to the participants' perceptions of the setting. Representation from all seven of the schools in the main data collection phase were collected in the member checking survey. Across the board the majority of staff agreed with the primary categories. Where staff did not completely agree, this was often reflective of the wider picture within their institution. For example, whilst all seven data sources discussed topics within the category of social media for PD, this area of practice was significantly stronger in some schools than others. The member checking survey found that 36 per cent of respondents either only somewhat agreed or entirely disagreed with the social media category. These respondents were from the schools where social media practices were less common.

The data also highlighted that whilst each school has its own unique context, the issues faced in relation to the DL development of teachers were common across all schools. The quotations used to illustrate the themes within the data were taken from the full range of sources. These were chosen to highlight the relevance of the themes across each school whilst still giving an individual voice to each institution.

The experiences collected within this thesis are rich and complex, resulting in a wide array of categories including both the barriers to and the benefits of PD for DL. The researcher found that the variety of opinions, and the codes generated from them, adequately demonstrate the complex nature of teachers' PD. Through the presentation of this research at regional and national conferences, the researcher has been able to confirm that the main theme derived from the data, namely the tension that exists for teachers wishing to develop their DL, is an issue that is understood by others familiar with the broader research context.

7.2.4 Usefulness

The core outcome of this thesis, the synthesis of the study's findings and the technology acceptance literature to create a framework of support for PD, presents a new interpretation within the field that is also practically applicable for schools and teachers in their daily,

working lives. As is suggested in section 6.5, *framing support for digital literacy professional development*, and presented again below in 7.5, *recommendations*, this thesis has generated recommendations for practice alongside recommendations for further research.

The contribution of this research is discussed in more detail in section 7.4, *contribution*, below. This thesis contributes to the field through its bottom up methodology, its generation of empirical evidence to support anecdotal knowledge, and its creation of a set of recommendations for educational researchers, higher education practitioners, schools and teachers themselves.

7.2.5 Research aims

Alongside the criteria identified by Charmaz (2014), the researcher also returned to the research aim and objectives and early memos to reflect on the initial intentions of the project. The primary aim of the study was to investigate how CPD strategies support the development of secondary school teachers' DL. The use of teacher voice was prioritised as a highly valuable, and often underutilised, resource in this endeavour. The purpose of the research question was to create parameters for the study that ensured an appropriate focus, whilst remaining broad enough not to constrain the potential findings. It supported the design of the PhD study and the initiation of conversations with potential research participants.

How do current professional development strategies for secondary school staff in England support the development of staff digital literacy?

At the time of this data collection, the most common method of DL development was ad hoc CPD achieved through informal exchanges with colleagues, and occasionally, external networks. Much of teachers' DL CPD was individually-driven, either by a personal interest or immediate classroom need. Whilst teachers are managing to get by on this method, it does little to improve their overall confidence in making effective use of technology. Their future use of technology is also poorly supported by this approach since they are learning snippets of information related to specific devices or software and do not have the opportunity to reflect on the transferability of these practices.

Where DL CPD is more formally organised and integrated into school practice, for example through the use of DL specialist roles, teachers were more confident to experiment with new digital practices. DL specialist roles encouraged longer-term engagement with digital practices and more regular sharing of best practice across subjects. The schools often engaged in a mix of internally- and externally-led CPD, utilising the expertise of their own staff where appropriate but knowing when to seek outside knowledge. In many cases, external CPD would be mediated by the DL specialist, either through joint-delivery or the DL specialist receiving the outside training and then delivering it themselves, customised to the needs of their peers.

In short, at present there are pockets of good practice, in which teachers' DL is being effectively supported. Due to the lack of a national strategy and a high-level support framework, however, effective practices are not widely shared. Teachers also found it difficult

to locate the right resources for their needs, given the vast range of materials available and the lack of guidance on quality and appropriateness.

Alongside the overarching research question, three initial objectives were identified to support the achievement of the overall aim of the study.

1. To explore existing professional development strategies, including the effects of different interpretations of teacher professionalism and the implementation of new technologies.
2. To collate the experiences and opinions of in-service school staff, in relation to their understanding of professionalism, their experiences professional development, and their digital literacy skills and confidence.
3. To formulate recommendations, based upon the themes which arise from the data, on digital literacy professional development strategies.

Objective one was met through the review of a substantial body of literature related to the field as demonstrated in chapter 2, *Literature Review*, of this thesis. Objective 2 was met through the collection of experiences and opinions of teachers via focus groups, interviews and observations, as demonstrated in chapter 4, *Findings*. Objective 3 was met through the data analysis and subsequent discussion, as demonstrated in chapters 5, *Teachers' Digital Literacy Development*, and 6, *Discussion*, respectively. These helped to formulate the recommendations of this thesis as presented below in section 7.5, *recommendations and implications*.

As highlighted in the introduction of this thesis, 1.2 *rationale*, the researcher began this PhD not only with formal research aims, but also with personal goals. These were revisited at the end of project using the research memos that were created during the design of the research, in *the uncertainty stage*. The researcher began this work with three personal goals.

- Value - to demonstrate the importance of digital literacy skills for teachers.
- Voice - to sufficiently represent the experiences and opinions of in service schools.
- Vocation- to not only generate theory but also practically useful recommendations.

By providing the context of the study, 1.1, and further information via the DL strand of the literature review, 2.3 *digital literacy*, the *value* of DL to teachers' practice has been presented. Teacher *voice* is the focal point of this thesis, as it is from teachers' reflections and knowledge that the themes have emerged. This has been confirmed through a member checking survey with participants, to ensure that the themes presented are representative of participants' experiences. Finally, in terms of *vocation*, this thesis has generated a range of recommendations for future research and also for current practitioners. The Teachers' Digital Engagement Framework can also be shared with schools, in its capacity as a support framework, to provide guidance on designing programmes of DL CPD.

7.3 Limitations

Being an entirely qualitative study means that this thesis is subjective and open to interpretation. As noted in 3.6, *trustworthiness*, traditional notions of validity and reliability are not appropriate within the qualitative research sphere. Rather, the researcher considers how their research meets the credibility, transferability, dependability and confirmability criteria (Lincoln and Guba 1985). As highlighted in 3.5.3, *strategies applied*, a number of methodological devices were employed to ensure the credibility of this research. It should be acknowledged that the aim of this research, to investigate how current PD strategies support the development of secondary school staff DL, was best approached through qualitative means. Only the experiences and knowledge of practising teachers could shed light on the processes, successes and complications associated with PD.

In terms of the generalisability of the research, the schools within this study are not significantly unique from others across the UK; however, one factor does need to be recognised. Prior to the research, all schools in the Leicester City had their premises rebuilt or refurbished as part of the BSF Programme. It is possible that this resulted in a lack of barriers regarding access to technologies, however, as the data illustrates the schools were still restricted by financial concerns and technical issues like many others. Crucially, DL is not focused on the use of specific technologies, but rather a broader approach to one's technology use. Therefore, whilst the specific conditions may be personal to the schools within this study, the overarching concern of teacher workloads and technology integration is a matter that applies to all schools.

7.4 Contribution

This thesis makes an original contribution in three parts, to develop a richer, practical analysis of secondary school teachers' digital literacy. First, it utilises the experiences and opinions of secondary school teachers in order to generate a grounded theory of the conditions in which teachers' professional development relates to their digital literacy. Second, from the data, a framework was developed identifying four spheres of concern that influence teachers' technology integration into their practice. This framework was used to explore the phenomenon in greater detail in order to reach an understanding of how the teachers within this study engaged with their digital literacy professional development. Additionally, the framework was refocused to create a scaffold for considering the appropriate support that could be implemented within the setting. Finally, recommendations were formulated for the education community, through the use of the support framework, to improve teachers' digital literacy professional development.

7.5 Recommendations

This thesis has developed a four-sphere framework through which teachers' interaction with DL CPD and digital practices can be explored. The framework offers a set of lenses that can be used to consider different aspects of a PD programme, in order to identify how well DL CPD can be supported in those circumstances. Additionally, the framework can be used as a scaffold for planning support and guidance for DL CPD. The framework is appropriate for use

with CPD of all kinds, whether a whole-school, formal CPD training programme or a small-scale, community-led event. The different uses for the Teachers' Digital Engagement Framework were demonstrated using the data collected within this study. This resulted in the creation of recommendations, not only for the schools with whom the research was conducted, but also for the wider education sector.

Table 7.1 Recommendations

Professional sphere	*Understanding how professional needs can be met by a digital practice*	Presenting educational research in the form of case studies
		Championing the use of practitioner briefings in educational research
Personal sphere	*Understanding how existing digital literacy will support engagement with new digital practice*	Supporting staff self-evaluation and reflection of digital literacy
		Encouraging initial engagement with new technologies through gamification techniques
Environmental sphere	*Supplying adequate support systems to encourage digitally literate practices*	Exploring the roles of Learning Technologists and Digital Champions in schools
		Examining the potential of school CPD partnerships
Cultural sphere	*Fostering a positive digital learning environment*	Providing further training and support to SLT and HoD for facilitating digital learning
		Investigating the role of online professional networks in technology adoption

7.5.1 Recommendation 1

To support teachers in understanding how their professional needs can be supported by digital practices the education research community, across all sectors, should present its pedagogic research in the form of case studies, with clear and concise practitioner briefings available to support educators in making informed choices in the classroom.

7.5.2 Recommendation 2

To support staff in understanding how their current DL aligns with new practices, schools should support them in reflecting upon their existing digital practices to help develop a clearer sense of their self-efficacy. As an induction point, games-based learning strategies should be employed to support teachers in overcoming the initial hurdle of learning to use a new technology.

7.5.3 Recommendation 3

In relation to the support environment in which teachers work, schools and the Government should consider utilising Learning Technologist roles as has been demonstrated in further and higher education. Digital Champion strategies for PD should also be considered given the benefit that internally-led CPD support can have to the relevance of teachers' PD. Both of these agendas could be supported by the research community through further investigation of the effectiveness of these roles.

7.5.4 Recommendation 4

To support the development of positive digital learning cultures in schools, specialised support and guidance should be given to leadership, and specifically to heads of department, around how to create positive learning cultures in relation to DL development. This should be supported by further research into the role of wider online professional networks and how they influence teachers' engagement with new technology.

7.5.5 Recommendation 5

The previous recommendations are each underpinned by the overarching recommendation for a National Strategy for Digital Literacy. This strategy would create an organisation supported by Government though practitioner-led. The role of the organisation would be: to support schools in making informed choices about the technology and digital CPD they invest in; collate high quality CPD resources to aid schools in gaining access; disseminate the latest educational technology research in an easily accessible format, such as a digital digest; and, to potentially provide teachers with a central network of like-minded practitioners. This organisation could also support the achievement of the recommendations above at both national and local level.

If teachers wish to develop their digital practice, it needs to be prioritised not only by the teacher but also by SLT. School culture has a vital role to play in teachers' implementation of digital practices and SLT need to be modelling the practices they wish to see in their staff. Schools should also consider how they can respond to the workload crisis, paying specific attention to where time can be freed up to support teachers in engaging in CPD. Additionally, schools would benefit from greater participation in open practices, so as to create the maximum possible benefit from DL CPD projects and research for the entire education community.

This research has shown that in order to support all teachers in engaging with evidence-based practice, the evidence needs to presented in an easily accessible format. For many teachers there are barriers to engaging with educational research: the publishing pay-wall; the volume of available publications; the language used; and the length of articles. In the first instance, education research needs to be presented in a format that is quick and easy to interpret. Once a teacher has been able to identify the relevance and appropriateness of the research to their own teaching, they can then read the full paper for more detail.

This research also highlights the great potential value of case study research for supporting the advancement of DL CPD. The research collected for this thesis alone has identified numerous pockets of good practice in relation to DL CPD, suggesting that there are many more across

England that could be studied. Case study research would allow for deeper investigation of specific schools and DL CPD programmes, which could then be shared nationally for the benefit of all schools and teachers.

Finally, this study has highlighted the contradiction between the Conservative Government's neoliberal ideology, and desire for a 'self-improving' system, and the extent to which they feel it necessary to dictate the roles, responsibilities and daily tasks of teachers. If school autonomy is truly a goal, then teachers need to have ownership of the foundational aspects of their role, such as defining the profession for themselves. Government intervention has been misguided in the past, with control focused on standards and curricula. If the Government were to instead focus their energies on creating a robust support framework for PD across England, enabling access to high quality CPD for all teachers, then the profession themselves would be in a better position to self-govern.

A National Strategy would offer the most effective support towards the development of teacher's DL. A high-level infrastructure that can be locally negotiated to suit the needs of individual schools. There is no one-size-fits-all answer to PD, with many aspects of a teacher's context affecting the success of a CPD programme, including: their subject; their pupils; and their wider school culture. Professional development in the UK today is highly fragmented, with little consistency in provision and few examples of schools who take a systemic approach to school-wide CPD. A professional learning scaffold, that can be personalised at the individual level, could be utilised in many areas of CPD, not just for DL.

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8. Bibliography

Adams, R. (2016) Nicky Morgan warns teachers: no 'reverse gear' for academies plan. The Guardian, 26 March [online] Available from: https://www.theguardian.com/education/2016/mar/26/nicky-morgan-academies-teachers-what-works-in-classrooms-nasuwt [Accessed 14/01/2018]

Adams, R. and Marsh, S. (2017) English schools taking desperate measures as funding crisis hits. The Guardian, 4 June [online] Available from: https://www.theguardian.com/education/2017/jun/04/uk-schools-taking-desperate-measures-as-funding-crisis-hits [Accessed 14/01/2018]

Ajzen, I. (1991) The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, vol.50(2), pp. 179-211.

Alexander, R. (2011) *Review of Teachers' Standards*. Cambridge Primary Review [online] Available from: http://cprtrust.org.uk/wp-content/uploads/2014/06/Standards_Review_short_110501.pdf [Accessed 14/01/2018]

Allen, R. and Allnutt, J. (2017) The impact of Teach First on pupil attainment at age 16. *British Educational Research Journal*, vol.43(4), pp. 627-646.

Almås, A.G. and Krumsvik, R. (2007) Digitally literate teachers in leading edge schools in Norway, *Journal of In-Service Education*, vol.33(4), pp. 479-497.

Association of Learning Technology (2014) *Learning Technologist of the Year 2014 – Runner Up* [online] Available from: https://altc.alt.ac.uk/blog/2014/09/learning-technologist-of-the-year-2014-runner-up/ [Accessed 14/01/2018]

Association of Learning Technology (2017) *What is Learning Technology?* [online] Available from: https://www.alt.ac.uk/about-alt/what-learning-technology [Accessed 14/01/2018]

Asthana, A. and Boycott-Owen, M. (2018) 'Epidemic of stress' blamed for 3,750 teachers on long-term sick leave. *The Guardian*, 11 January [online] Available from: https://www.theguardian.com/education/2018/jan/11/epidemic-of-stress-blamed-for-3750-teachers-on-longterm-sick-leave?CMP=share_btn_tw [Accessed 14/01/2018]

ASCL (2015) *A World-class Teaching Profession Consultation Response of the Association of School and College Leaders*. London.

ASCL (2017) *ASCL comment on postgraduate teaching apprenticeship* [online] Available from: https://www.ascl.org.uk/news-and-views/news_news-detail.ascl-comment-on-postgraduate-teaching-apprenticeship.html [Accessed 14/01/2018]

Atkins, L., Fraser, J., and Hall, R. (2014) *DigiLit Leicester: 2014 Survey Results*. Leicester: Leicester City Council (CC BY-NC 3.0)

ATL (2012) *Position Statement: Teacher Professionalism*. [online] Available from: https://www.atl.org.uk/Images/Teacher%20professionalism%20-%20April%202012.pdf [Accessed 14/01/2018]

ATL (2015) *Call for evidence: A Standard for teachers' professional development*. London.

ATL (2017) *Government is right that a new funding formula for schools is needed, say education unions* [online]. Available from: https://www.atl.org.uk/latest/Government-right-new-funding-formula-schools-needed-say-education-unions [Accessed 14/01/2018].

Avalos, B. (2011) Teacher professional development in Teaching and Teacher Education over ten years. *Teaching and Teacher Education*, vol.27(1), pp. 10–20.

Baisley, A. (2017a) *School Cuts* [online]. Available from: http://www.schoolcuts.org/ [Accessed 14/01/2018

Baisley, A. (2017b) *School Cuts [school]* [online]. Available from: https://www.schoolcuts.org.uk/#!/schools?chosenSchool=8564232 [Accessed 14/01/2018].

Ball, S.J. (2003) The Teacher's soul and the terrors of performativity. *Journal of Educational Policy*, vol.18(2), pp. 215-228.

Ball, S.J. (2005) Professionalism, managerialism and performativity. *Cad. Pesqui*. vol.35(126), pp. 539-564.

Ball, S.J. (2013) *The Education Debate*. 2nd Edition. Bristol: The Policy Press.

Bandura, A. (1971) *Social Learning Theory*. New York: General Learning Press.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review,* vol.84*,* pp. 191-215.

Barber, M. (2005) Informed Professionalism: Realising the Potential. *Presentation to a conference of the Association of Teachers and Lecturers*, London, June 11.

Basit, T.N. (2010) *Conducting Research in Educational Contexts*. London: Continuum.

Bawden, D. (2008) Origins and Concepts of Digital Literacy. In: Lankshear, C. and Knobel, M. (eds.) *Digital Literacies: concepts, policies and practices*. New York: Peter Lang, pp. 17-32.

Bazeley, P. and Jackson, K. (2013) *Qualitative Data Analysis with Nvivo*. 2nd Edition. London: Sage.

Bell, B., & Gilbert, J. (1994). Teacher development as professional, personal, and social development. *Teaching and Teacher Education, 10,* 483-497.

Bélisle, C. (2006) Literacy and the digital knowledge revolution. In: Martin, A. and Madigan, D. (eds.) *Digital Literacies for Learning*. London: Facet Publishing, pp. 51-67.

Belshaw, D. (2011a) *What is digital literacy? A Pragmatic investigation*. Thesis (PhD), Durham University.

Belshaw, D. (2011b) *'Digital literacy' in Norway?* [online] Available from: http://dougbelshaw.com/blog/tag/norway/ [Accessed 14/01/2018]

Belshaw, D. (2012) *Chapter 9: A matrix of elements* [online] Available from: http://neverendingthesis.com/index.php?title=Chapter_9_-_A_matrix_of_elements [Accessed 14/01/2018]

Bennet, S., Maton, K. and Kervin, L. (2008) The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, vol.39 (5), pp. 775-786.

Bent, M. and Stubbings, R. (2011) *The Seven Pillars of Information Literacy: the core model*. SCONUL. Available from: http://www.sconul.ac.uk/page/seven-pillars-of-information-literacy [Accessed 14/01/2018]

BERA (2011) *Ethical Guidelines for Educational Research*. London: BERA.

Billett, S. (2001) Learning through work: workplace affordances and individual engagement. *Journal of Workplace Learning*, vol.13(5), pp. 209–214.

Birks, M. and Mills, J. (2015) *Grounded Theory: a practical guide.* Second edition. London: Sage.

Birman, B.F., Desimone, L., Porter, A.C., Garet, M.S. and Yoon, K. (2000) Designing professional development that works. *Educational Leadership*, vol.57(8), pp. 28–33.

Borko, H. (2004) Professional Development and Teacher Learning : Mapping the Terrain. *Educational Research*, vol.33(8), pp. 3–15.

Bringer, J.D., Johnston, L.H. and Brackenridge, C.H. (2006) Using Computer-Assisted Qualitative Data Analysis Software to Develop a Grounded Theory Project. *Field Methods*, vol.18(3), pp. 245–266.

British Computer Society - The Chartered Institute for IT (2015) *Consultation Response to: Department for Education A world-class teaching profession.* London.

Brown, B. (2009*) Qualitative methodologies: ethnography, phenomenology, grounded theory and more*. [online] Available from: http://www.brown.uk.com/teaching/qualitativepostgrad/handout.pdf [Accessed 14/01/2018]

Brown, P., Ashton, D. and Lauder, H. (2010) *Praxis: Skills are not enough: The globalisation of knowledge and the future UK economy*. UKCES. Available from: http://dera.ioe.ac.uk/11094/ [Accessed 14/01/2018]

Bryant, A. and Charmaz, K. (2007) *The SAGE Handbook of Grounded Theory*. Paperback Edition. London: Sage.

Bryman, A (1988) *Quantity and Quality in Social Research*. London: Routledge.

Bryman, A. (2012) *Social Research Methods*. Oxford: Oxford University Press.

Centre for Media Literacy (2016) *Media Literacy: A Definition and More* [online] Available from: http://www.medialit.org/media-literacy-definition-and-more [Accessed 14/01/2018]

CfSA: The Council for Subject Associations (2015) *Response to the "world-class teaching profession" consultation* [online] Available from: http://www.subjectassociations.org.uk/userfiles/World_Class_teaching_profession_consultation_response_02.02.15.pdf [Accessed 14/01/2018]

Charmaz, K., (2000) Grounded Theory: objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln, eds. *Handbook of Qualitative Research*. 2nd Edition. London: Sage, pp. 509–535.

Charmaz, K. (2006) *Constructing Grounded Theory: A practical guide through qualitative analysis*. Thousand Oaks: Sage.

Charmaz, K. (2014) *Constructing Grounded Theory*. Second edition. London: Sage.

Chartered College of Teaching (2017) *Access to research*. [online] Available from: https://chartered.college/research-access [Accessed 14/09/2017]

Chartered College of Teaching (2017) *Professional Principles*. [online] Available from: https://chartered.college/chartered-teacher/professional-principles [Accessed 04/12/17]

Cheah, P.K., Yap, Y.O., Unnithan, P., Moses, P., Diong, F.W. and Er, P.H. (2014) Factors leading to technology non-use in education: Validation of reversed-UTAUT (R-UTAUT). *Proceedings of the International Conference on e-Learning*, ICEL. 39-44.

Chung, A., Bond Gill, I., O'Byrne, I. (2016) *Web Literacy 2.0*. Mozilla [online] Available from: https://mozilla.github.io/content/web-lit-whitepaper/ [Accessed 14/01/2018]

Coates, S. (2011a) *First report of the independent review of Teachers' Standards: QTS and Core Standards* [online] Available from: https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/175433/first_report_of_the_review_of_teachers_standards.pdf [Accessed 14/01/2018]

Coates, S. (2011b) *Second report of the independent review of Teachers' Standards: Post-threshold, Excellent teacher and Advanced skills teachers standards* [online] Available from: https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/177118/DFE-00168-2011.pdf [Accessed 14/01/2018]

Cohen, L., Manion, L. and Morrison, K. (2011) *Research Methods in Education*. London: Routledge.

Corbin, J.M. and Strauss, A.L. (2008) *Basics of Qualitative Research: techniques and procedures for developing grounded theory*. 3rd Edition. London: Sage.

Corbin, J.M. and Strauss, A.L. (2015) *Basics of Qualitative Research: techniques and procedures for developing grounded theory*. 4th Edition. London: Sage.

Cordingley, P., Higgins, S., Greany, T. and Coe, R. (2015) *Developing Great Teaching*. Teacher Development Trust: London.

Coughlan, S. (2016) Justine Greening appointed new education secretary. *BBC* [online] Available from: http://www.bbc.co.uk/news/education-36793920 [Accessed 14/01/2018]

Creswell, J. W. & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice*, 39(3), 124-131.

Dalal, M., Archambault, L. and Shelton, C. (2017) Professional Development for International Teachers: Examining TPACK and Technology Integration Decision Making. *Journal of Research on Technology in Education*, vol.49(3-4), pp. 117-133.

Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Management Information Systems Quarterly*, vol.13(3), pp. 319-340.

Davis, F.D., Bagozzi, R. and Warshaw, P.R. (1998) User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, vol. 35(8), pp. 982-1003.

Davis, F.D., Bagozzi, R.P and Warshaw, P.R. (1992) Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, vol.22(14), pp. 1111-1132.

Day, C. (1999) *Developing Teachers: The Challenges of Lifelong Learning*. London: Falmer Press.

Day, C. (2002) School reform and transitions in teacher professionalism and identity. *International Journal of Educational Research*, vol.37, pp.677-692.

Delamont, S. (2004) Ethnography and participant observation. In: C. Seale, G. Gobo, J.F. Gubrium, and D. Silvermann (eds). *Qualitative Research Pratice*. London: Sage.

Desimone, L.M. (2009) Improving Impact Studies of Teachers' Professional Development: Toward Better Conceptualizations and Measures. *Educational Researcher*, vol.38(3), pp. 181–199.

Denscombe, M. (2014) *The Good Research Guide: for small-scale social research projects*. Maidenhead: McGraw-Hill Education.

Department for Digital, Culture, Media and Sport (2017a) *UK Digital Strategy 2017* [online] Available from: https://www.gov.uk/Government/publications/uk-digital-strategy/uk-digital-strategy [Accessed 14/01/2018]

Department for Digital, Culture, Media and Sport (2017b) *2. Digital skills and inclusion - giving everyone access to the digital skills they need* [online] Available from: https://www.gov.uk/Government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need [Accessed 14/01/2018]

Department for Education (1988) *Education Reform Act 1988* [online] Available from: http://www.legislation.gov.uk/ukpga/1988/40/contents [Accessed 14/01/2018]

Department for Education (1989) *The Education (Teachers) Regulations* (SI 1989/1319). London: HMSO.

Department for Education (1992*) Initial Teacher Training (Secondary Phase)*, Circular 9/92. London: HMSO.

Department for Education (2010) *The importance of teaching.* London: HMSO, Cm 7980.

Department for Education (2011) *Teacher's Standards*. Available from: https://www.gov.uk/Government/publications/teachers-standards [Accessed 14/01/2018]

Department for Education (2012a) *The Education (School Teachers) (Qualifications and Specified Work) (Miscellaneous Amendments) (England) Regulations* (SI 2012/1736). London: HMSO.

Department for Education (2012b) *Teaching Agency: Framework document*. London: HMSO.

Department for Education (2013a) *Research Priorities and Questions Teachers and Teaching*. London: HMSO.

Department for Education (2013b) *National curriculum in England: computing programmes of study* [online] Available at: https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study [Accessed 14/01/2018]

Department for Education (2014) *A world-class teaching profession: Government consultation*. London: HMSO.

Department for Education (2015) *Teachers' professional development standard: call for evidence* [online] Available from: https://www.gov.uk/Government/consultations/teachers-professional-development-standard-call-for-evidence [Accessed 14/01/2018]

Department for Education (2016a) *Education Excellence Everywhere* [online] Available from: https://www.gov.uk/government/publications/educational-excellence-everywhere [Accessed 14/01/2018]

Department for Education (2016b) *Standard for teachers' professional development* [online] Available from: https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/537030/160712_-_PD_standard.pdf [Accessed 14/01/2018]

Department for Education (2016c) *Standard for teachers' professional development: Implementation guidance for school leaders, teachers, and organisations that offer professional development for teachers* [online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537031/160712_-_PD_Expert_Group_Guidance.pdf [Accessed 14/01/2018]

Department for Education (2016d) *School Workforce in England: November 2015* [online] Available from: https://www.gov.uk/government/collections/statistics-school-workforce [Accessed 14/01/2018]

Department for Education (2017) *Open academies and academy projects in development* [online] Available from: https://www.gov.uk/government/publications/open-academies-and-academy-projects-in-development [Accessed 14/01/2018]

Department for Education (2018) *Policy paper: Reducing Teacher Workload* [online] Available from: https://www.gov.uk/government/publications/reducing-teachers-workload/reducing-teachers-workload [Accessed 14/01/2018]

Department for Education and Employment (1997) *Teaching: High Status, High Standards; requirements for courses of Initial Teacher Training*, Circular 10/97. London: HMSO.

Department for Education and Employment (2001) *Learning and Teaching: A Strategy for Professional Development*, London, HMSO.

Department for Education and Science (1985) *Better schools*. London: HMSO, Cm 9469.

Department for Education and Science (1987) *The Education (School Teachers' Pay and Conditions of Employment) Order 1987* [online] Available from: http://www.legislation.gov.uk/uksi/1987/650/contents/made [Accessed 14/01/2018]

Dyson, S. and Brown, B. (2006) *Social theory and applied health research*. Maidenhead: Open University Press.

Easton, L.B. (2008) From professional development to professional learning. *Phi Delta Kappan*, pp. 755–761.

Erstad, O. (2008) Trajectories of Remixing: Digital literacies, Media production and Schooling. In: Lankshear, C. and Knobel, M. (eds.) *Digital Literacies: concepts, policies and practices*. New York: Peter Lang, pp. 177-202.

EU Science Hub (2017) *DigCompEdu: Digital Competence Framework for Educators* [online] Available from: https://ec.europa.eu/jrc/en/digcompedu [Accessed 14/01/2018]

European Commission and Directorate General for Communications Networks, Content and Technology (2013) *Survey of Schools: ICT in Education: benchmarking access, use and attitudes to technology in Europe's schools*. Brussels: EC and DG Connect.

European Parliament and the Council of the European Union (2006) *Recommendation of the European Parliament and of the council of 18 December 2006 on key competences for lifelong learning* [online] Available from: http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32006H0962&from=EN [Accessed 14/01/2018]

Evans, L. (2002) What is teacher development? *Oxford Review of Education*, vol.28(1), pp. 123–137.

Evans, L. (2011) The "shape" of teacher professionalism in England: professional standards, performance management, professional development and the changes proposed in the 2010 White Paper. *British Educational Research Journal*, 37(5), pp.851–870.

Evans, G. (2013) A Novice Researcher's First Walk Through the Maze of Grounded Theory: Rationalization for Classical Grounded Theory. *The Grounded Theory Review*, vol.12(1), pp. 37-55.

Evetts, J. (2012) Professionalism in Turbulent Times: Changes, Challenges and Opportunities. *Professional Practice, Education and Learning International Conference*, Stirling, May 9-11.

Fieldhouse, M. and Nicholas, D. (2008) Digital Literacy as Information Savvy. In: Lankshear, C. and Knobel, M. (eds.) *Digital Literacies: concepts, policies and practices*. New York: Peter Lang, pp. 47-72.

Fielding, M. (1999) Radical collegiality: Affirming teaching as an inclusive professional practice. *Australian Educational Researcher*, 26(2). pp. 1-34.

Fishbein, M. and Ajzen, I. (1975) *Belief, attitude, intention, and behavior*. Reading, MA: Addison-Wesley.

Foster, R. (2000) The Graduate Teacher Programme: just the job? *Journal of In-Service Education*, vol.26(2), pp. 297-309.

Fournier, V. (1999) The Appeal to 'Professionalism' as a Disciplinary Mechanism. *Sociological Review*, vol.47(2), pp. 280–307.

Fraser, C., Kennedy, A., Reid, L. and McKinney, S. (2007) Teachers' continuing professional development: contested concepts, understandings and models. Journal of In-service Education. vol.33(2), pp. 153-169.

Fraser, J., Atkins, L. and Hall, R. (2013) *DigiLit Leicester: Initial Project Report*, Leicester: Leicester City Council (CC BY-NC 3.0)

Furlong, J., Barton, L., Miles, S., Whiting, C. and Whitty, G. (2000) *Teacher Education in transition: re-forming professionalism?* Buckingham: Open University Press.

Geertz, C. (1973) *The Interpretation of Cultures.* London: Fontana.

Gibb, N. (2015) *The importance of the teaching profession* [online] ResearchEd Conference, London, September 5. Transcript available from: https://www.gov.uk/Government/speeches/nick-gibb-the-importance-of-the-teaching-profession [Accessed 14/01/2018]

Gillard, D. (2005) *Tricks of the trade: whatever happened to teacher professionalism?* [online] Available from: http://www.educationengland.org.uk/articles/23tricks.html [Accessed 14/01/2018]

Gillen, J. and Barton, D. (2010) *Digital literacies: A Research Briefing by the Technology Enhanced Learning phase of the Teaching and Learning Research Programme*. London: London Knowledge Lab.

Gilster, P. (1997) *Digital Literacy*. New York: John Wiley & Sons, inc.

Glaser, B. G. (1978). *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Mill Valley, Ca.: Sociology Press.

Glaser, B.G. (1998) *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.

Glaser, B.G. and Strauss, A.L. (1967) *The discovery of Grounded Theory: Strategies for qualitative research*. New York: Aldine.

Goepel, J. (2012) Upholding Public Trust: An Examination of Teacher Professionalism and the Use of Teachers' Standards in England. *Teacher Development*, vol.16(4), pp. 489–505.

Goldacre, B. (2013) Building Evidence into Education [online] Available from: https://www.gov.uk/government/news/building-evidence-into-education [Accessed 14/01/2018]

Goodall, J., Day, C., Lindsay, G., Muijs, D. and Harris, A. (2005) *Evaluating the Impact of Continuing Professional Development (CPD)*. The University of Warwick. Coventry: DfES.

Goodwyn, A. (2012) One size fits all: The increasing standardisation of English teachers' work in England. *English Teaching: Practice and Critique*, vol.11(4), pp. 36-53.

Gove, M. (2012a) *Michael Gove at the National College annual conference. National College Annual Conference*, June 14 [online] Transcript available from: https://www.gov.uk/Government/speeches/michael-gove-at-the-national-college-annual-conference [Accessed 14/01/2018]

Gove, M. (2012b) *Michael Gove speech at the BETT Show 2012*, January 11 [online] Transcript available at: https://www.gov.uk/Government/speeches/michael-gove-speech-at-the-bett-show-2012 [Accessed 14/01/2018].

Gray, S.L. and Whitty, G. (2010) Social trajectories or disrupted identities? Changing and competing models of teacher professionalism under New Labour. *Cambridge Journal of Education*, vol.40(1), pp. 5-23.

Greeno, J.G., Collins, A.M., and Resnick, L. (1996) Cognition and learning. In: Berliner, D.C. and Calfree, R.C. (eds.) *Handbook of educational psychology*, New York: Simon and Schuster Macmillan, pp. 15-47.

Guba, E.G. (1990) *The Paradigm Dialogue*. California: Sage.

Guba, E.G. and Lincoln, Y.S. (1989) *Fourth Generation Evaluation*. California: Sage.

Guskey, T.R. (2002) Professional Development and Teacher Change. *Teachers and Teaching: Theory and Practice*, vol.8(3/4), pp. 37–41.

Guskey, T.R. (2003) The Characteristics of Effective Professional Development: A Synthesis of Lists. *Annual meeting of the American Educational Research Association*, pp. 1–24.

Hadfield, M. and Chapman, C. (2009) *Leading School-based Networks*. London: Routledge.

Hague, C. and Payton, S. (2010) *Digital Literacy across the curriculum: a Futurelab handbook* [online] Futurelab. Available from: http://www2.futurelab.org.uk/resources/publications-reports-articles/handbooks/Handbook1706 [Accessed 14/01/2018]

Hague, C. and Williamson, B. (2009) *Digital participation, digital literacy and school subjects: a review of policies, literature and evidence* [online] Futurelab. Available from: http://www.futurelab.org.uk/sites/default/files/Digital_Participation_review.pdf [Accessed 14/01/2018

Hall, R., Atkins, L. and Fraser, J. (2014) Defining a self-evaluation digital literacy framework for secondary educators: The DigiLit Leicester project. *Research in Learning Technology*, vol.22.

Hallahan, I. (2010) *TeachMeet - The Story So Far.....* [online] Available from: http://h-blog.me.uk/archives/161 [Accessed 14/01/2018]

Halpern, E. (1983) *Auditing naturalistic inquiries: the development and application of a model*. Unpublished doctoral dissertation, Indiana University.

Hammersley, M. (2012) *Methodological Paradigms in Educational Research*. British Educational Research Association [online] Available from: https://www.bera.ac.uk/researchers-resources/publications/methodological-paradigms-in-educational-research [Accessed 14/01/2018]

Hanlon, G. (1998) Professionalism as Enterprise: service class politics and the redefinition of professionalism, *Sociology*, vol.32(1), pp. 43–63.

Harden, R.M. and Crosby, J. (2000) The good teacher is more than a lecturer - the twelve roles of the teacher. *Medical Teacher*, vol.22 (4), pp. 334-347.

Hardy, I. (2012) *The Politics of Teacher Professional Development: Policy, Research and Practice*. Abingdon: Routledge.

Hargittai, E. and Shafer, S. (2006) Differences in Actual and Perceived Online Skills: The Role of Gender. *Social Science Quarterly*, vol.87(2), pp. 432-448.

Hargreaves, A., (2000) Four Ages of Professionalism and Professional Learning. *Teachers and Teaching: Theory and Practice*, 6(December 2014), pp.151–182.

Haßler, B., Major, L., Warwick, P., Watson, S., Hennessy, S. and Nicholl, B. (2016) *Perspectives on Technology, Resources and Learning: Productive Classroom Practices, Effective Teacher Professional Development*. Faculty of Education, University of Cambridge. CC-BY 4.0

Hazell, W. (2018) 'Alarming' new stats show teacher recruitment down by a third. *TES* [online] Available from: https://www.tes.com/news/school-news/breaking-news/alarming-new-stats-show-teacher-recruitment-down-a-third [Accessed 14/01/2018]

Helsby, G. (1996) Defining and Developing Professionalism in English Secondary Schools. *Journal of Education for Teaching*, vol.22(2), pp. 135-148.

Helsby, G. (1999) *Changing Teachers' Work*. 2nd Edition. Buckingham: Open University Press.

Helsper, E. J. and Eynon, R. (2010) Digital Natives: where is the evidence? *British Educational Research Journal*, vol.36 (3), pp. 503-520.

Hinds, D. (2018) Damian Hinds appointed Secretary of State for Education. Department for Education [online] Available from: https://www.gov.uk/Government/news/damian-hinds-appointed-secretary-of-state-for-education [Accessed 14/01/2018]

Holton, J.A. (2007) The coding process and its challenges. In: A. Bryant and K. Charmaz (Eds.) *The SAGE Handbook of Grounded Theory*. London: Sage, pp. 265-289.

Hoyle, E. and John, P.D. (1995) *Professional Knowledge and Professional Practice*. London: Cassell.

Hunzicker, J. (2010) *Effective professional development for teachers: a checklist* [online] Available from: https://eric.ed.gov/?id=ED510366 [Accessed 14/01/2018]

Hutchison, A.J., Johnston, L.H. and Breckon, J.D. (2010) Using QSR-NVivo to facilitate the development of a grounded theory project: an account of a worked example. *International Journal of Social Research Methodology*, vol. 13 (4), pp. 283-302.

Idrees, I., Vasconcelos, A.C. and Cox, A.M. (2011) The use of Grounded Theory in PhD research in knowledge management: a model four-stage research design. *New Information Perspectives*, vol.63 (2/3), pp. 188-203.

IRIS Connect (2016) *Recruit Train Develop Retain* [online] Available from: http://discover.irisconnect.com/shaping-the-future-of-cpd-report [Accessed 14/01/2018]

Jackson, A. and Burch, J. (2016) School Direct, a policy for initial teacher training in England: plotting a principled pedagogical path through a changing landscape. *Professional Development in Education*, vol.42(2), pp. 511-526.

JISC (2014) *Developing Digital Literacies.* [online] Available from: https://www.jisc.ac.uk/guides/developing-digital-literacies [Accessed 14/01/2018]

Johnson, G. M. (2008) Functional Internet Literacy. In: Lankshear, C. and Knobel, M. (eds.) *Digital Literacies: concepts, policies and practices*. New York: Peter Lang, pp. 33-46.

Judkins, M., Stacey, O., McCrone, T. and Innis, M. (2014) *Teachers' use of research evidence: A case study of United Learning schools*. Slough: NFER.

Kellner, D. (2002) Technological Revolution, Multiple Literacies, and the restructuring of education. In: Snyder, L. (ed.) *Silicon Literacies: Communication, Innovation and Education in the Electronic Age*. London: Routledge, pp. 154-169.

Kim, S., Lee, J. and Yoon, D. (2015) Norms in Social Media: The Application of Theory of Reasoned Action and Personal Norms in Predicting Interactions with Facebook Page Like Ads. Communication Research Reports, vol.32(4), pp. 322-331

King, A. (1993) Sage on the Stage to Guide on the Side. *College Teaching*, vol.41(1), pp. 30-35.

Kløvstad, V., Erstad, O., Kristiansen, T. and Søby, M. (2005) *ITU Monitor 2005: Towards digital competence in basic education*. Oslo: Universitestsforlaget

Kope, M. (2006) Understanding E-Literacy. In: Martin, A. and Madigan, D. (eds.) *Digital Literacies for Learning*. London: Facet Publishing, pp. 68-79.

Krumsvik, R.J., Jones, L.Ø., Øfstegaard, M. and Eikeland, O.J. (2016). Upper Secondary School Teachers' Digital Competence: Analysed by Demographic, Personal and Professional Characteristics. *Nordic Journal of Digital Literacy*, vol.11 (3), pp. 143–164.

Kuhn, T. (1996) *The Structure of Scientific Revolutions*. 3rd Edition. Chicago: The University of Chicago Press.

Labour Press (2014) *Cameron's unqualified teacher policy delivers 16 per cent rise in unqualified teachers in our schools - Tristram Hunt*. [online] Available from: http://press.labour.org.uk/post/82283068129/camerons-unqualified-teacher-policy-delivers-16 [Accessed 14/01/2018]

Lanham, R. (1995), Digital literacy. *Scientific American* 273 (3): 160–161.

Lankshear, C. (1997). *Changing literacies*. Philadelphia: Open University Press.

Lankshear, C. and Knobel, M. (2015) Digital Literacy and Digital Literacies: - Policy, Pedagogy and Research Considerations for Education. *Nordic Journal of Digital Literacy*, vol.10, pp. 8-20.

Lave, J. and Wenger, E. (1991) *Situated learning: legitimate peripheral participation*. New York: Cambridge University Press.

Lawlor, S. (1990) *Teachers mistaught: training in theories or education in subjects?* London: Centre for Policy Studies.

Leech, N.L. and Onwuegbuzie, A.J. (2011) Beyond Constant Comparison Qualitative Data Analysis: Using NVivo. *School Psychology Quarterly*, vol.26 (1), pp. 70 – 84.

Legris, P., Ingham, J. and Collerette, P. (2003) Why do people use information technology? A critical review of the technology acceptance model. *Information and Management*, vol.40, pp. 191-204

Leithwood, K., Aitken, R. and Jantzi, D. (2006) *Making Schools Smarter: Leading with Evidence*. 3rd Edition. California: Corwin Press.

Lempert, L.B. (2007) Asking questions of the data: memowriting in the grounded theory tradition. In: Bryant, A. and Charmaz, K. (eds.) *Handbook of grounded theory*. London: Sage, pp. 245-264.

Lincoln, Y.S. and Guba, E.G. (1985) *Naturalistic Enquiry*. California: Sage.

Littlejohn, A., Beetham, H. and McGill, L. (2012) Learning at the digital frontier: a review of digital literacies in theory and practice. *Journal of Computer Assisted Learning*, vol.28 (6), pp. 547-556

Livingstone, I. and Hope, A. (2011) *Next Gen.* London: NESTA.

Lumb, S., Mason, R. and Price, G. (1991) Technology Teacher Training: the North-West Consortium Articled Teacher Scheme in England. *European Journal of Education*, vol.26(3), pp. 207-220.

MacBeath, J. (2011) Education of teachers: the English experience. *Journal of Education for Teaching*, vol.37(4), pp. 377-386.

Macfarlane, A. (2016) Teaching – craft or profession? *Education Today*, vol.66(2), pp. 2-4.

Mahoney, P. and Hextall, I. (2013) 'Building Schools for the Future': 'transformation' for social justice or expensive blunder? *British Educational Research Journal*, vol. 39 (5), pp. 853–871

Martin, A. (2006) Literacies for the digital age: a preview of part 1. In: Martin, A. and Madigan, D. (eds.) *Digital Literacies for Learning*. London: Facet Publishing, pp. 3-25.

Martin, A. and Grudziecki, J. (2007) *DigEuLit: Concepts and Tools for Digital Literacy Development*. Available from: http://www.ics.heacademy.ac.uk/italics/vol5iss4/martin-grudziecki.pdf [Accessed 14/01/2018]

Martin, A. (2008) Digital Literacy and the 'Digital Society'. In: Lankshear, C. and Knobel, M. (eds.) *Digital Literacies: concepts, policies and practices*. New York: Peter Lang, pp. 151-176.

Massachusetts Institute of Technology (2013) *Reclaim Open Learning: Innovation Gallery* [online]
Available from: http://open.media.mit.edu/innovation-contest/ [Accessed 14/01/2018]

Mayes, A.S. (2012) National standards for teachers: twenty-first century possibilities for professional development. In: Banks, F. and Mayes, A.S. (eds.) *Early Professional Development for Teachers*. London: David Fulton Publishers Ltd, pp. 64-70.

Mercier, C. (2014) The assessment of student teachers. In: Philpott, C., Scott, H. and Mercier, C. (eds.) *Initial Teacher Education in Schools: a guide for practitioners*. London: Sage, pp. 91-106.

Merchant, G. (2007) *Digital Literacy: new technologies for meaning making in educational settings*. Thesis (PhD, Sheffield Hallam University.

Millerson, G. (1964) *The Qualifying Associations: A Study in Professionalization*. London: Routledge and Kegan Paul.

Mills, J., Bonner, A., & Francis, K. (2006). The development of constructivist grounded theory. *International Journal of Qualitative Methods*, vol.5(1), pp. 25-35.

Mishra, P. and Koehler, M.J. (2006) Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record*, vol.108 (6) pp. 1017-1054.

Mishra, P. and Koehler, M. (2012) *The TPCK Image*. [online] Available from: www.tpack.org [Accessed 14/01/2018]

Moore, A. and Clarke, M. (2016) 'Cruel optimism': teacher attachment to professionalism in an era of performativity*. Journal of Education Policy*, vol. 31(5), pp. 666-667.

Morris, E. (2001) *Professionalism and trust: the future of teachers and teaching*. London: Department for Education and Skills.

NAHT (2014) *Response to DfE consultation on a world class teaching profession.* London.

NASUWT (2015) *Consultation Response: Department for Education A world-class teaching profession* [online] Available from: https://www.nasuwt.org.uk/uploads/assets/uploaded/42cad025-d0b4-4319-afa23f4153281731.pdf [Accessed 14/01/2018]

National College for Teaching and Leadership (2017) *Postgraduate teaching apprenticeships: guidance for providers and schools* [online] Available from: https://www.gov.uk/guidance/postgraduate-teaching-apprenticeships-guidance-for-providers [Accessed 14/01/2018]

National Foundation for Educational and Research (2015) *Consultation response: A world-class teaching profession*.

Neary, M. and Winn, J. (2012) Open Education: Common(s), Commonism and the New Common Wealth. *Ephemera: Theory & Politics in Organization*, vol.12 (4), pp. 406–22.

Ng, W. (2015) *New Digital Technology in Education: Conceptualizing Professional Learning for Educators*. New York: Springer.

Nistor, N., Lerche, T., Weinberger, A., Ceobanu, C. and Heymann, O. (2014) Towards the integration of culture into the Unified Theory of Acceptance and Use of Technology. *British Journal of Educational Technology*, vol.45 (4), pp. 36-55.

OECD (2009) *Creating Effective Teaching and Learning Environments First Results from TALIS*. Paris: OECD Publications.

Oliver, M. (2002) What do Learning Technologists do*? Innovations in Education and Teaching International*, vol.39(4), pp. 245-252.

Opfer, V.D. and Pedder, D. (2010) Access to continuous Professional Development by teachers in England. *Curriculum Journal*, vol.21(4), pp. 453–471.

Opfer, V.D. and Pedder, D. (2010) Benefits, status and effectiveness of Continuous Professional Development for teachers in England. *Curriculum Journal*, vol.21(4), pp. 413–431.

Opfer, V.D. and Pedder, D. (2011) Conceptualizing Teacher Professional Learning. *Review of Educational Research*, vol.81(3), pp. 376–407.

Opfer, V.D., Pedder, D. and Lavicza, Z. (2011) The influence of school orientation to learning on teachers' professional learning change. *School Effectiveness and School Improvement*, vol.22(2), pp. 193-214.

Oxford University Press (2018) *Competence*. [online] Available from: https://en.oxforddictionaries.com/definition/competence [Accessed 26/03/2018]

Parker, I. (1999) Qualitative data and the subjectivity of 'objective facts'. In: D. Dorling and L. Simpson (Eds.) *Statistics in Society: The Arithmetic of Politics*. London: Arnold, pp. 83-88.

Parker, T. (2016) *Digital Literacies at King*. [Prezi slides] Available from: https://prezi.com/9g7fi7w9m-vq/digital-literacies-at-king/ [Accessed 14/01/2018]

Payton, S. and Hague, C. (2010) *Digital Literacy in practice: Case studies of Primary and Secondary classrooms* [online] Futurelab. Available from: http://www2.futurelab.org.uk/resources/documents/project_reports/digital_literacy_case_studies.pdf [Accessed 14/01/2018]

Pedder, D. (2006) Organizational conditions that foster successful classroom promotion of learning how to learn. *Research papers in Education*, vol.22, pp. 171-200.

Pedder, D., Opfer, V.D., McCormick, R. and Storey, A. (2010) Schools and Continuing Professional Development in England - State of the Nation research study: policy context, aims and design. *The Curriculum Journal*, vol. 21(4), pp. 365-394.

Pedder, D. and Opfer, V.D. (2010) Planning and organisation of teachers' Continuous Professional Development in schools in England. *Curriculum Journal*, vol.21(4), pp. 433–452.

Pianfetti, E.S. (2001) Teachers and Technology: Digital Literacy through professional development. *Language Arts*, vol.78(3), pp. 255-262.

Pollard, A. (2010) *Professionalism and Pedagogy: A contemporary opportunity. A Commentary by TLRP and GTCE*. London: TLRP

Prensky, M. (2001) *Digital Game-Based Learning*. New York: McGraw-Hill.

Prensky, M. (2010) *Teaching Digital Natives: Partnering for real learning*. London: Sage.

Pring, R. (1999) Universities and Teacher Education. *Higher Education Quarterly*, vol.53(4), pp. 290–
311. Available from: http://dx.doi.org/10.1111/1468-2273.00133 [Accessed 14/01/2018]

Pring, R. (2015) *Philosophy of Educational Research*. 3rd edition. London: Bloomsbury Academic.

QSR International (2012) Nvivo 10 for Windows help. [online] Available from: http://help-nv10.qsrinternational.com/desktop/welcome/welcome.htm [Accessed 14/01/2018]

QSR International (2017) Nvivo 11 for Windows help. [online] Available from: http://help-nv11.qsrinternational.com/desktop/welcome/welcome.htm [Accessed 14/01/2018]

Qualifications and Curriculum Authority (1999) *The National Curriculum: Handbook for secondary teachers in England*. London: QCA.

Rand, A. (1982) *Philosophy: Who needs it*. London: Penguin Books.

RCUK (2017) *RCUK Policy and Guidelines on Governance of Good Research Conduct* [online] Available from: http://www.rcuk.ac.uk/documents/reviews/grc/rcukpolicyguidelinesgovernancegoodresearchconduct-pdf/ [Accessed 14/01/2018]

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In: J. Sikula (Ed.) *Handbook of research on teacher education*, 2nd ed. New York: Macmillan, pp. 102-119.

Roberts, N. and Foster, D. (2017) *Initial teacher training in England*. Briefing Paper 6710. London: House of Commons Library.

Rogers, E. (1995) *Diffusion of innovations.* Michigan: Free Press.

Saldaña, J. (2009) *The coding manual for qualitative researchers.* Second edition. London: Sage.

Sampson, R.J., Morenoff, J.D. and Earls, F. (1999) Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review*, vol.64, pp. 633-660.

Savage, M. (2017) Almost a quarter of teachers who qualified since 2011 have left profession. *The Guardian*, 8 July [online] Available from: https://www.theguardian.com/education/2017/jul/08/almost-a-quarter-of-teachers-who-have-qualified-since-2011-have-left-profession [Accessed 14/01/2018]

Schwandt, T.A. (2007) *The SAGE Dictionary of Qualitative Inquiry*. California: Sage.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.

Scutt, C. (2017) *The Chartered Teacher Programme: Professional Principles for the pilot cohort*. [online] Available from: https://chartered.college/chartered-teacher-professional-principles [Accessed 04/12/2017]

The Select Committee on Digital Skills (2015) *Make or Break : The UK ' s Digital Future*. The House of Lords (Report of Session 2014-15). London: HMSO. HL 111.

Silverman, D. (1993) *Interpreting qualitative data*. London: Sage.

Silverman, D. (2011) *Interpreting qualitative data*. Fourth edition. London: Sage.

Siskin, L. (1994) *Realms of Knowledge: academic departments in Secondary schools*. London: The Falmer Press.

Solomon, Y, and Lewin, C. (2016) Measuring 'progress': performativity as both driver and constraint in school innovation. *Journal of Education Policy*, vol.31(2), pp. 226-238.

Sparrow, A. (2017) Greening raids her own budget to find extra £1.3bn for frontline school spending - Politics live. *The Guardian* [online] Available from: https://www.theguardian.com/politics/blog/live/2017/jul/17/brexit-talks-david-davis-barnier-promises-to-delve-into-heart-of-matter-as-latest-round-of-brexit-talks-starts-politics-live?page=with:block-596cd96be4b0a11877b3b067#block-596cd96be4b0a11877b3b067 [Accessed 14/01/2018]

Starks, H. and Brown Trinidad, S. (2007) Choose Your Method: A comparison of Phenomenology, Discourse Analysis, and Grounded Theory. *Qualitative Health Research*, vol.17 (10), pp. 1372-1380.

Stoll, L., Harris, A. and Handscomb, G. (2012) *Great professional development which leads to great pedagogy: nine claims from research*. Nottingham: NCSL.

Storey, A. (2009) How fares the 'New Professionalism' in schools? Findings from the 'State of the Nation' project. *Curriculum Journal*, vol.20(2), pp. 121–138.

Strauss, A.L. and Corbin, J.M. (1998) *Basics of Qualitative Research: techniques and procedures for developing grounded theory*. London: Sage.

Sum, N. and Jessop, B. (2013) *Towards a cultural political economy: putting culture in its place in political economy*. Cheltenham: Edward Elgar Publishing Limited.

Sutton Trust (2014). *Royal College of Teaching advocates still need to win over teachers* [online] Available at: http://www.suttontrust.com/newsarchive/royal-college-teachingadvocates-still-need-win-teachers-sutton-trust/ [04/12/2016]

Swann, M., McIntyre, D., Pell, T., Hargreaves, L. and Cunningham, M. (2010) Teachers' conceptions of teacher professionalism in England in 2003 and 2006. *British Educational Research Journal*, vol.36(4), pp. 549-571.

Syal, R. (2017) More than 600,000 pupils in England taught by unqualified teachers, says Labour. *The Guardian*, 25 July [online] Available from: https://www.theguardian.com/education/2017/jul/25/more-than-600000-pupils-in-england-taught-by-unqualified-teachers [Accessed 14/01/2018]

Talbert, J.E. and McLaughlin, M.W. (1994) Teacher Professionalism in Local School Contexts, *American Journal of Education*, vol.102(Fall), pp. 123-153.

Teach First (2017) *Our History* [online] Available from: https://www.teachfirst.org.uk/our-history [Accessed 14/01/2018]

Teacher Development Trust (2012) *The new National CPD Database* [online] Available from: http://tdtrust.org/the-new-national-cpd-database-2 [Accessed 14/01/2018]

Tech City UK (2017) *Tech Nation 2017* [online] Available from: https://technation.techcityuk.com/ [Accessed 14/01/2018]

Teo, T., Lee, C.B. and Chai, C.S. (2007) Understanding pre-service teachers' computer attitudes: applying and extending the technology acceptance model. *Journal of Computer Assisted Learning*, vol.24(2), pp. 128-143.

Teo, T. (2009) Modelling technology acceptance in education: a study of pre-service teachers. *Computers and Education*, vol. 52(2), pp. 302-312.

The Hillgate Group (1989) *Learning to Teach*. London: The Claridge Press.

The Royal Society (2012) *Shut down or restart? The way forward for computing in UK schools*. London. CC BY-NC-SA 3.0.

The Royal Society (2017) *After the Reboot: computing education in UK schools*. London. CC-BY 4.0.

Thompson, R.L., Higgins, C.A., and Howell, J.M. (1991) Personal Computing: Toward a Conceptual Model of Utilization. *Management Information Systems Quarterly*, vol.15 (1), pp. 125-143.

Tomlinson, H. (1997) *Managing Continuing Professional Development in Schools*. London: Paul Chapman Publishing.

Tong, R. and Williams, N. (2011) Feminist Ethics*. Stanford Encyclopedia of Philosophy* [online] Available from: https://plato.stanford.edu/archives/sum2011/entries/feminism-ethics/ [Accessed 14/01/2018]

Trades Union Congress (2017) *Workers in the UK put in £33.6 billion worth of unpaid overtime a year* [online] Available from: https://www.tuc.org.uk/news/workers-uk-put-%C2%A3336-billion-worth-unpaid-overtime-year [Accessed 14/01/2018]

Training and Development Agency (2007) *Professional Standards for Teachers: why sit still in your career?* London: TDA.

Twining, P. (2013) *Three strands in Computing National Curriculum* [online] Available from: http://edfutures.net/Three_strands_in_computing_national_curriculum [Accessed 14/01/2018]

UK Digital Skills Taskforce (2014) *Digital Skills for Tomorrow's World: Interim Report*. London: British Computer Society.

UK RIO (2011) *Code of Practice for Research* [online] Available from: http://ukrio.org/publications/code-of-practice-for-research/1-0-introduction/ [Accessed 14/01/2018]

United Nations Educational, Scientific and Cultural Organisation (2011) *Policy Brief: Digital Literacy in Education* [online] UNESCO. Available from: http://unesdoc.unesco.org/images/0021/002144/214485e.pdf [Accessed 14/01/2018]

University of Bristol (2018) Document Summary Service [online] Available from: https://edn.bris.ac.uk/dss/ [Accessed 14/01/2018]

Van Eck, R. (2006) Digital Game-Based Learning: It's not just the Digital Natives who are restless. *EDUCAUSE review*, vol.41 (2), pp. 16-30.

Venkatesh, V. and Davis, F.D. (1996) A model of the antecedents of perceived ease of use: development and test. *Decision Sciences*, vol.27 (3), pp. 451-481.

Venkatesh, V., and Davis, F.D. (2000) A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, vol.46 (2), pp. 186-204.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003) User Acceptance of Information Technology: Toward a Unified View. *Management Information Systems Quarterly*, vol.27 (3), pp. 425-478.

Wagner, D., Day, B., James, T., Kozma, R. B., Miller, J., and Unwin, T. (2005). *Monitoring and evaluation of ICT in education projects: a Handbook for Developing Countries*. Washington DC: InfoDev/World Bank.

Wayne, a. J., Yoon, K.S., Zhu, P., Cronen, S. and Garet, M. (2008) Experimenting with Teacher Professional Development: Motives and Methods. *Educational Researcher*, vol.37(8), pp. 469–479.

Weaver, M., Marsh, S. and Adams, R. (2017) Schools in England cut back on teaching hours to save money. *The Guardian*, 28 June [online] Available from: https://www.theguardian.com/education/2017/jun/28/leicestershire-school-plans-four-and-a-half-day-teaching-week [Accessed 14/01/2018]

Webb J. (2013) *The NAACE response to national curriculum consultation*. NAACE [online] Available from: http://www.naace.co.uk/curriculum/consultationresponse [*Accessed 15/09/2015*]

Wellcome Trust (2015) *Department for Education: A world-class teaching profession Response by the Wellcome Trust*. London: Wellcome Trust.

Welsh, T. and Wright, M. (2010) *Information Literacy in the Digital Age: An evidence-based approach*. Oxford: Chandos Publishing.

Wenger, E. (1998) *Communities of Practice: learning, meaning and identity*. New York: Cambridge University Press.

Wenger, E. and Wenger-Trayner, B. (2015) *Introduction to communities of practice* [online] Available from: http://wenger-trayner.com/introduction-to-communities-of-practice/ [Accessed 14/01/2018]

Werbach, K. and Hunter, D. (2012) *For The Win: How game thinking can revolutionize your business*. Philadelphia: Wharton Digital Press.

Whitehouse, C. (2011) *Effective Continuing Professional Development For Teachers*. Centre for Education Research and Policy. Manchester: AQA.

Whitty, G. (2008) Changing modes of teacher professionalism: traditional, managerial, collaborative and democratic. In: Cunningham, B. (ed.) *Exploring Professionalism*. London: Bedford Way Papers, pp. 28-50.
Whitworth, A., Garnett, F. and Pearson, D. (2012) Aggregate-then-Curate: how digital learning champions help communities nurture online content. *Research in Learning Technology*, vol.20, pp. 399-415

Younie, S. and Leask, M. (2013) Teaching with Technologies: the essential guide. Maidenhead: Open University Press.

2Simple (2015) *Parent share* [online] Available from: https://www.2simple.com//parent-share [Accessed 13/11/15]

9. Appendices

List of Appendices

Appendix A Participant demographic information

School	Role	Years of Service	Route in role	Age	Gender
SCH1	Teacher	37	B.Ed	55-64	Female
SCH1	Teacher	30	B.Ed Hons	45-54	Female
SCH1	Teacher	35	Special Needs Degree	55-64	Female
SCH1	Teacher	10	Human communication degree > Primary PGCE > 5years Mainstream > SEN	25-34	Female
SCH1	Deputy Head Teacher	36	Class teacher > subject leader > SENCO > Deputy Head > Head Teacher > Deputy Head	55-64	Female
SCH1	Communication support coordinator	30	NNEB > HLTA > F&A	45-54	Female
SCH2	Teacher	First year in service	College Lecturer 1994-2011 > eLearning Coordinator 2011-2014	35-44	Female
SCH3	Assistant Head Teacher	5 (at KLS)	Head of English > Leadership	35-44	Female
SCH3	Assistant Head Teacher	15	B.Ed	35-44	Male
SCH3	Teacher	3	PGCE	25-34	Male
SCH3	Trainee P.E. Teacher	2	TA > Training Course	25-34	Male
SCH3	Teacher	20	PGCE	35-44	Female
SCH3	Teacher	19	PGCE	35-44	Female
SCH3	Teacher	15	PGCE	35-44	Female
SCH3	Maths Teacher	3	Primary SCITT	25-34	Male
SCH3	KS2 Teacher	10	BA Hons Early Years Education	25-34	Female
SCH3	Unqualified teacher	8	Degree, PGCE	25-34	Female
SCH3	Teacher	13	PGCE	25-34	Female
SCH3	Curriculum TA (Art)	5 months	Art and Care experience. Animation degree.	25-34	Female
SCH3	Curriculum Enrichment	4	P.E. Teacher > Head of P.E. > Leadership team	25-34	Male
SCH4	Strategic Lead of New Technology	19	History teacher > ICT	45-54	Male
SCH4	P.E. Teacher	2.5	PGCE	25-34	Male
SCH4	Music Teacher	14	BA Hons, PGCE	25-34	Female
SCH4	Lead of English and Whole School Literacy	9.5	PGCE	25-34	Female

SCH4	Teacher	34	Degree, PGCE	55-64	Female
SCH4	Teacher	1	PGCE, BA Hons Drama Studies	25-34	Female
SCH4	Teacher of Mathematics	3	PGCE	35-44	Male
SCH4	Trainee Maths Teacher	4 months	PGCE, Secondary SCITT	35-44	Female
SCH4	D&T Teacher	6 years	PGCE	35-44	Male
SCH4	Leader of Aspiration and Challenge	1.5	QTLS	45-54	Male
SCH5	Teacher of Science/RPS	11	PGCE	25-34	Female
SCH6	Teacher	20	PGCE	55-64	Male
SCH6	ICT	4.5	Lecturer	25-34	Male
SCH6	Teacher	3	Teacher	55-64	Male
SCH6	ICT Manager	16	NVQ	25-34	Male
SCH6	Teacher	5	PGCE	45-54	Male
SCH6	Acting Centre Manager	11	Youth Work	35-44	Male
SCH6	Teacher (Maths)	19/20	PGCE	45-54	Female
SCH6	Pastoral and Behavioural Support Worker	8	Learning Disability Nursing Dip HE	35-44	Male
SCH7	Curriculum leader	10	PGCE Secondary Drama	25-34	Female
SCH7	P.E. Instructor	9	BTEC > Degree > Voluntary > Supply > Curriculum assistant level C	35-44	Female
SCH7	Vice Principal and Teacher	13	PGCE	35-44	Female
SCH7	Vice Principal	15	PGCE	45-54	Female
SCH7	Teacher	16	PGCE	45-54	Male
SCH7	Class Teacher > Head of English and Communication	9	PGCE	25-34	Female
SCH7	Deputy Principal	24	PGCE Secondary	45-54	Female
SCH7	Vice Principal	16	PGCE	35-44	Female
SCH7	Trainee Teacher	0	SCITT, Non-Salaried	25-34	Female
SCH7	Trainee Teacher	0	SCITT, Non-Salaried	25-34	Female

SCH7	Class Teacher	2	PGCE	25-34	Female
SCH7	Teacher and Curriculum Leader for the arts	15	PGCE	35-44	Female
SCH7	PMLD Curriculum Leader (Assistant Head Teacher)	16	B.Ed > Primary Education	35-44	Female
SCH7	Teacher	2	PGCE	25-34	Female
SCH7	Curriculum Leader for Preparing for Adulthood	25	A Levels > Degree > PGCE	45-54	Female
SCH7	Class room Teacher	22	Graphic Designer > B.Ed Design Technology	45-54	Female
SCH7	Maths Curriculum Leader	7	SCITT (2nd Career - first as qualified accountant)	45-54	Male
SCH7	Teacher	2.5	SCITT	35-44	Female
SCH7	Teacher	2	PGCE/Schools Direct	25-34	Female
SCH8	Lead teacher: digital learning	4	PGCE	25-34	Male
SCH8	Specialist Lead Teacher: Teaching and Learning	11	PGCE	25-34	Male
SCH8	Lead teacher: professional learning	7	GTP (PGCE)	25-34	Female
SCH9	College Leader: New Technologies			35-44	Male

Appendix B Focus group - Researcher topic guide

The purpose of this focus group is to explore staff experiences of previous professional development sessions, relating to the use of technology.

Participants: Secondary school staff who support learners, including: senior leadership with a teaching role, teachers, classroom assistants, specialist provision (such as English as an Additional Language, EAL, and Special Educational Needs, SEN, support) and library staff.

Participant consent: Participants will sign a consent form in order to participate in this focus group. They will be informed of any audio-taping, its purpose and secure storage.

Demographic data: Basic demographic data will be anonymously collected (see below) from participants in order to support later theoretical sampling, for example, if a different perspective is required on an emerging theme. To aid this process, whilst protecting staff anonymity, participants will be issued a unique reference number.

Please answer the following questions in the spaces provided or tick the most appropriate options.

1. School: _____
   _____
2. Role: _____
   _____
3. Years of Service: _____
4. Route into role*: _____
   _____
5. Age: ☐ Under 25 ☐ 25-34 ☐ 35-44
   ☐ 45-54 ☐ 55-64 ☐ 65 and over
6. Gender: ☐ Male ☐ Female ☐ Prefer not to say

Thank you for taking the time to complete this questionnaire

*For example, Postgraduate Certificate in Education, School Centred Initial Teacher Training, Teach First, Diploma, City and Guilds, Volunteering.

Discussion guide

Researcher's welcome

Welcome and thank you for agreeing to be part of today's focus group. I really appreciate your willingness to participate. My name is Lucy Atkins and I am a PhD student from De Montfort University.

Introduction: The purpose of this session is to collect information about your experiences of professional development, with regard to the use of technology in the classroom. The discussion will take no more than an hour. May I tape the discussion to help me with later transcription? I would just like to reassure you that audio recording is only for the purposes of transcription and once they are transcribed word for word, then they will be destroyed. If there are any discussions that you do not wish to participate in, you do not have to do so.

Ground rules

- There are no right or wrong answers – everyone's experiences and opinions are important.
- Please do speak up and where possible try not to speak over one another – to help the transcription process.
- When you do have something to say, please do so. There are many of you in the group and it is important that I obtain the views of each of you
- You do not have to agree with the views of other people in the group
- Does anyone have any questions?

Warm up: I'd like us to begin with everyone introducing themselves. Please can you tell us your name?

Introductory question: Now I'd like you to take a couple of minutes to think about an experience of professional development or training which has been focused on the use of technology in the classroom. Is anyone happy to share his or her experience?

Guiding questions

- How did yourself and others present engage in the session? (what did people think/say/do?)
- What were yours and others feelings about the outcome of the session?
- What drove that reaction?
- What impact do you think the session had on your digital literacy?
- What were your thoughts on the content?
- What were your thoughts on the format/structure?
- Were there any barriers to the session? Were there any enablers?
- Have you used the tool/practice in your own teaching since the session?
- If you could change the session in any way what would that be?

Concluding question: Of all the things we've discussed today, what would you say are the most important issues?

Conclusion: Thank you for sharing your experiences; this has been a very successful discussion. I hope you have found the discussion interesting and if there is anything you would like to speak to me about I will remain here for a while for you to do so. Please do remember to return your personal details questionnaires.

Appendix C Participant information sheet

My name is Lucy Atkins and I am a research student at De Montfort University, studying for a PhD in Educational Technology. I am undertaking PhD research into; 'a critical evaluation of continuing professional development (CPD) strategies for digital literacy in UK compulsory education'.

The aim of my research is to investigate current CPD strategies and their impact on the development of school staff digital literacy. In order to achieve this aim I am running a series of focus groups, collating the experiences and opinions of in-service teachers, in relation to their professional development and digital literacy skills and confidence. Focus group sessions will take place at the end of the school day, at the school.

The data collected within the focus groups will be used to generate recommendations on digital literacy professional development strategies, meaning that this is an opportunity for you to have your say and to contribute to future developments in CPD.

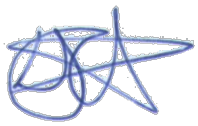
The session will last no longer than an hour, and will be recorded with your permission. This is for transcription purposes only and will be destroyed once transcription has been completed. All data will be anonymised before publication and where quotations from staff are used they will not be shared alongside any data which may identify the individual.

If you have a complaint regarding anything to do with this study, you can initially approach the lead investigator. If this achieves no satisfactory outcome, you should then contact the Administrator for the Faculty Research Ethics Committee, Research & Commercial Office, Faculty of Health & Life Sciences, 1.25 Edith Murphy House, De Montfort University, The Gateway, Leicester, LE1 9BH or hlsfro@dmu.ac.uk

If you have any questions regarding this study, please email me at p0825048x@email.dmu.ac.uk.

I look forward to working with you.

Best wishes,



Lucy Atkins

Appendix D Consent form

Thank you for agreeing to participate in this study. The aim of today's focus group is to discuss your experiences of professional development, in relation to the use of technology to support teaching and learning. The session will be audio recorded, this is for transcription purposes only and the recording will be destroyed once transcription has been completed. All data will be anonymised before publication and where quotations from staff are used they will not be shared alongside any data which may identify the individual. You are free to withdraw from the research at any point without having to offer any reasons for doing so, and you have the right to see any written records relating to your involvement in the research, including published research.

Please read and sign the statement below if you agree. If you have concerns, please discuss them with me. I will be unable to interview you for my research without this written consent.

Statement of Consent

- I have been informed of and understand the purposes of the study.
- I have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions, and any additional details I wanted.
- I understand that excerpts from the focus group may be included in publications based upon this research. Quotations will be kept anonymous and it will not be possible to identify me from my comments.
- I give permission for the interview to be recorded using audio recording equipment, with the understanding that recordings will be destroyed once transcription has been completed.
- All information will be processed and securely stored in accordance with the Data Protection Act 1998 and the University's Information Security policies as found at https://www.dmu.ac.uk/about-dmu/quality-management-and-policy/information-security/information-security.aspx

Consent form

I agree with the Statement of Consent above and agree to participate in this study (tick one only).

☐ Yes ☐ No

I agree to being contacted again by the researcher for a follow up interview. (tick one only)

☐ Yes ☐ No

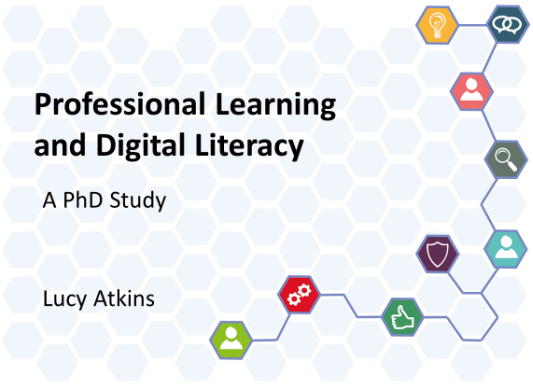
If yes, my preferred method of being contacted is:

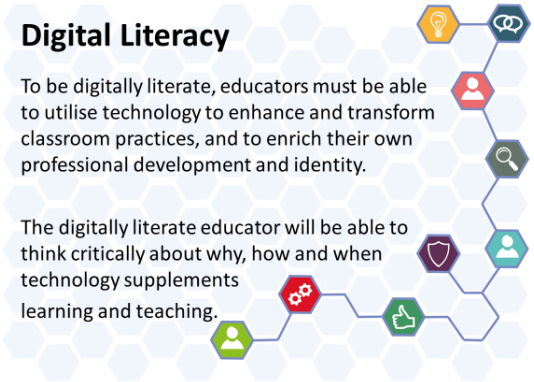
☐ Telephone …… ☐ Email ……

☐ Other ……

Participant Name:		Consent taken by:	
Participant Signature:		Signature:	
Date:		Date:	

Appendix E Data collection introduction slides





Appendix F Observation Schedules

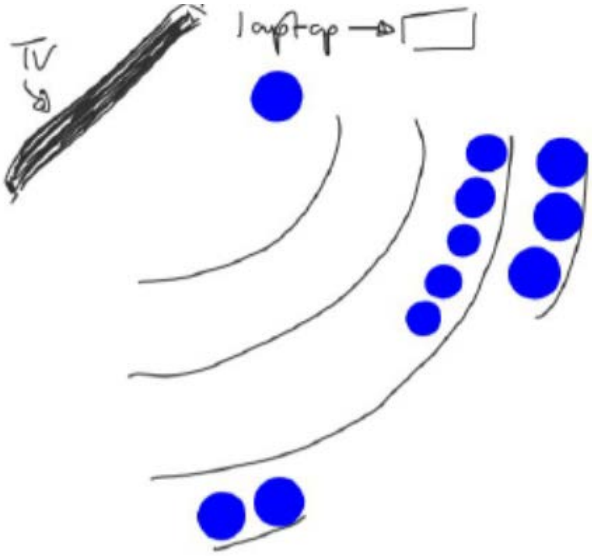
i Observation 1

Barriers	
• Conflict of interest • BSF • being let down by technology issues • being held back by network issues • lacking technical knowledge • Poor CPD delivery • lacking support • Financial constraints • Negative attitude of others • receiving passive CPD • inability to embed • Cinderella Sector	• Due to technical difficulties the meeting was moved from the staffroom to the lunch space. • Continued technical difficulties affected the flow of the session, resulting in a number of leaving part way through. • Being in the communal lunch space resulted in a group of school children walking through the training and attempting to disrupt the session. • Staff asked for the session to be as quick as possible, since it was being held at the end of the school day and they had other duties to attend to. • The facilitator noted that video tutorials to support CPD were being created but were not yet available.
Professionalism	
• Adaptability • Duty of care • Quality practice • School Context • Accountability • Competency • Collegiality	
Positive elements	
• Active learning • utilising internal expertise • Collaboration • sharing practice • lots of ideas • opportunity to embed • having evidence of success • duration	• Despite not being intentional, some staff did work together to support one another in understanding how the app worked. This was largely due to them not being able to follow the facilitator. • Staff were told that they could use their own devices during the session if they wished, though most just sat and listened. This may be due to the cafeteria space not allowing them to work at tables, or due to the rushed pace of the session. • One example was presented, anecdotally, of another teacher using the app who had encourage her students to record their own goals on the programme and then follow them up themselves to encourage reflective learning, though no detail was given as how this was accomplished.
Learning needs	
• Relevance • Time • preferring to learn face-to-face • needing facilitator to be knowledgeable • needing follow up PD	• There was no specific content focus – the training was purely focused on the functionality of the app. • No discussion of pedagogic uses, some generic assessment ideas were suggested. • Software had been purchased by SLT for the whole school.

• Awareness of available technology	
Support	
• learning from colleagues • external support • supporting others • other schools • CPD support materials	• Leaflets with a walkthrough of the main app function were shared out by the facilitator, to support staff in the process if they needed a reminder after the session. • Facilitator also offered to return to provide further CPD if required.
Web 2.0	
• using twitter professionally • using forums for CPD • accessing CPD resources online • using online courses • blogging about CPD and practice • using virtual learning environment • using Facebook to network	
CPD Strategies	
• Self-directed • faculty champion model • cascading	
Other	

Whilst the session encountered a number of issues, this not seem to deter the staff who had stayed to engage with the CPD. They could clearly see how the app would be beneficial to their practice and so were keen to use it. One teacher noted that whilst the training wasn't great, she liked the app and would look into it more herself.

The drawing here shows the layout of the room during the CPD – the blue dots indicate the position of the staff involved in the session. The blue dot by the laptop and TV is the facilitator.



Appendix F Observation Schedules

ii Observation 2

Barriers	
• Conflict of interest • BSF • being let down by technology issues • being held back by network issues • lacking technical knowledge • Poor CPD delivery • lacking support • Financial constraints • Negative attitude of others • receiving passive CPD • inability to embed • Cinderella Sector	
Professionalism	
• Adaptability • Duty of care • Quality practice • School Context • Accountability • Competency • Collegiality	
Positive elements	
• Active learning • utilising internal expertise • Collaboration • sharing practice • lots of ideas • opportunity to embed • having evidence of success • duration	• The meetings are centred around the sharing of practice across faculties. They can involve a mix of verbal sharing and practical hands-on of new tools, depending on the focus for practice across the term. • The faculty representatives take on the responsibility of modelling good digital practice to their faculty colleagues, and act as a source of guidance and evidence of success for new practices.
Learning needs	

• Relevance • Time • preferring to learn face-to-face • needing facilitator to be knowledgeable • needing follow up PD • Awareness of available technology	• By supporting staff across all faculties, the school ensures that someone within in faculty is confident in their digital skills to the point that they can support their colleagues. The digital champion model also increases the likelihood of CPD being relevant to individual staff needs, as most teachers will receive their digital CPD from a colleague within their own faculty.
Support	
• learning from colleagues • external support • supporting others • other schools • CPD support materials	• Sharing practices across faculties creates the opportunity for staff to pick up on ideas from their colleagues in other subject areas. • Within the digital champions meetings, staff support one another in new digital practices so that they can then go on to support their colleagues within their own faculties.
Web 2.0	
• using twitter professionally • using forums for CPD • accessing CPD resources online • using online courses • blogging about CPD and practice • using virtual learning environment • using Facebook to network	• The digital champions use a hashtag across the school to share practice and promote the digital practices that they engage with in their subject areas. This raises awareness of practices across the school and identifies colleagues who can be contacted for support in similar practices. • Many departments in the school have their own twitter accounts, as well as making use of school-wide hashtags. • Most departments also have a blog through which they share their practice.
CPD Strategies	
• Self-directed • faculty champion model • cascading	• The school utilises a faculty champion model, with one representative for each faculty to share ongoing practices with digital technologies. • The role of the lead teacher for digital learning is to support and upskill the digital champions, so that they can then support their colleagues.
Other	

Appendix G Member checking

i Survey

Digital Literacy and Professional Development

This short survey is designed to ensure that the findings of my PhD research study reflect the experiences and opinions shared by all who participated in either interviews or focus groups. Your engagement with this short exercise is very valuable to me, as it allows me to verify (or helps me to revise) my findings so that I can ensure I am writing up a faithful account of our discussions.

What follows is a brief summary of the main categories arising from the data collected. For each summary you will be asked if the interpretation represents your own experiences and opinions and you will also be given the option to share any thoughts, if you wish.

Please note that the categories presented here are from the entire data collection phase of the study, not solely from the session that you participated in. I have also tried to keep the summaries brief, to make this process simple and time-effective for you. Therefore, if you require further explanation of a category, please contact me at the email address below.

Should you experience any issues in completing this survey, please do not hesitate to contact me at lucy.atkins@my365.dmu.ac.uk and I will do my best to help.

Thank you for your help in this verification exercise, and for your previous engage in my PhD research.

Which school do you work for/did you work for during the data collection?

_____

Professionalism

As you may recall, we began the focus group or interview that you participated in with a short discussion of professionalism within UK teaching. Therefore, it is unsurprising that one of the key themes to emerge from the data is that of professionalism. The most frequent theme within the professionalism data relates to the need for a teaching professional to stay current. This is both in relation to their subject and pedagogic knowledge, as well as with the latest developments in classroom technologies. Another element of professionalism to come across strongly from the focus groups and interviews was a sense of duty of care, of fulfilling a necessary role for the public good. This view of professionalism is centred around doing the best for students, not only as learners but as individuals to whom school staff are responsible.

There are a number of classroom abilities and teaching skills which are viewed as being a sign of high quality in a teacher. It would appear, from the data, that these abilities are also viewed as an indicator of a professional. These include the ability to inspire, engage and challenge. Accountability, meeting external expectations of school staff, was highlighted most often in relation to meeting the teaching standards and following school guidelines on conduct. The category of competency was also generated, to represent the need for professionals in

education to be sufficiently skilled, qualified and experienced to fulfil their duties to learners. Competency in the classroom involves both practical skills and pedagogical knowledge.

The specific needs of the school and an ability to work in support of these, was seen as an element of maintaining professionalism. This involves understanding the wider school culture and the individual roles that work together within it. Linked to this is the notion of collegiality, the ability of a member of school staff to work effectively and productively with their colleagues, for the greater good of the school.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Barriers to Professional Development

A prominent theme throughout the data collected was that of barriers to professional development (PD), the issues that made it hard to either engage with opportunities or to implement the lessons learnt. Conflicts of interest were identified as a key restriction to successful CPD. These were the instances where, for a variety of reasons, ICT CPD was not or could not be prioritised. Examples of this include teachers having to put other teaching responsibilities first and schools not currently prioritising ICT CPD due to other, often statutory training needs. Another significant barrier cited was issues with the school network and classroom technologies. Often staff felt that either the network or the devices available could not be relied upon to perform as intended, and so they did not feel confident in experimenting with new practices that required those resources.

Poor CPD delivery, from external providers, was also seen as a significant barrier. A lack of technical know-how and lack of support or resources were also discussed as being issues that prevented staff from engaging with meaningful digital literacy CPD. In these cases it was often staff not knowing where to begin or how to begin and struggling to access to the necessary support to experiment with a new practice.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Learning Needs

The learning needs topic relates to desired elements of CPD, as identified by participants throughout the focus groups and interviews. The most frequent of these was the need for CPD to be explicitly relevant to the teacher. Relevance was discussed in relation to subject relevance, learner relevance and being appropriate for the teacher at that point in relation to their specific needs. The importance of time appeared frequently throughout the data collection, with teachers noting in particular the need for time to practice with new technologies, to implement new practices, to collaborate with others and to reflect.

Other needs identified include a desire to learn face-to-face, the importance of a knowledgeable facilitator, understanding the potential of available technologies and for CPD to be innovative, progressive and inspiring.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Positive Elements of Professional Development

Positive elements of CPD are those features that, in the opinions of those interviewed, ensure the success of digital literacy CPD. Active learning was identified as crucial to positive experiences of CPD, where those involved are given ample opportunity to experiment and play with new technologies and tools and to use the CPD as a springboard for implementation. Utilising internal expertise was also seen as a beneficial element of CPD. Where more knowledgeable staff are available in the school, teachers prefer to learn from their colleagues as they understand the unique setting of the school and are able to relate new practices to their specific context.

Professional development that involves learning collaboratively was also highlighted. Other favourable components included CPD that offered a wide range of introductory ideas, to increase awareness of new practices; CPD that could be embedded soon after learning, so CPD could be implemented quickly; and, CPD that had evidence of success, where teachers could see that it had worked in other classrooms.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Support Systems

Here participants discussed the different systems of support that they relied upon for CPD opportunities. The most common source of support was learning from colleagues. This was often informal support, in the form of an individual seeking advice and tips from another. Participants also valued the help and guidance of external support, often in the form of local F.E and H.E institutions, as well as companies who offer CPD. Other schools are also utilised to add to internal resources.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Use of Web 2.0

Participants highlighted a number of online tools that they used for support their professional development. Twitter was the most common tool, used primarily for networking and finding resources and ideas. Forums were also used to locate resources and share practice. A number of individuals used blogs to share and reflect on their teaching practice. Online courses were often used for statutory training (such as safeguarding, equality and diversity) as well as more self-directed learning opportunities. School VLEs were also identified as a source of professional development resources.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Professional Development Strategies

Participants sometimes noted the professional development strategies employed within their own school, occasionally by those present in the interview. Faculty champions appear to be a popular system; where individuals in each faculty take on the responsibility of encouraging and

supporting CPD in a given area (in this case digital literacy) within their faculty. this approach utilises faculty expertise and supports individual teachers in having access to CPD from someone within their own subject area. The cascade model, where a small group or an individual receive CPD and then share it among the school where it can be spread further is also a current approach being used. This model is cost effective and again relies on internal support systems.

Whilst not an intentional strategy, self-directed learning was often discussed. Staff noted that in relation to classroom technologies, learning would often happen on the go, through the process of use.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

Attitude to Learning

This category relates to the emotions and attitudes demonstrated throughout the focus groups and interviews, towards digital literacy professional development. The most prominent theme within this category is confidence. This was discussed both in relation to feeling confident and in the need to be confident when using technology in the classroom. Participants were also explicit in their ability to see the value of educational technology, when applied appropriately and understood the importance of being willing to 'give it a go'.

There were also some discussions which suggested that whilst new technologies were in place, these were being used to continue old practices and that sometimes a resistance to change could make engagement with CPD less enjoyable. Finally, teachers identified a desire to remain relevant to their learners and to be seen as modelling good digital literacy practices.

Does this reflect your own experiences and opinions?

- o Yes
- o Somewhat
- o No

Would you like to add any comments regarding this category?

_____
_____

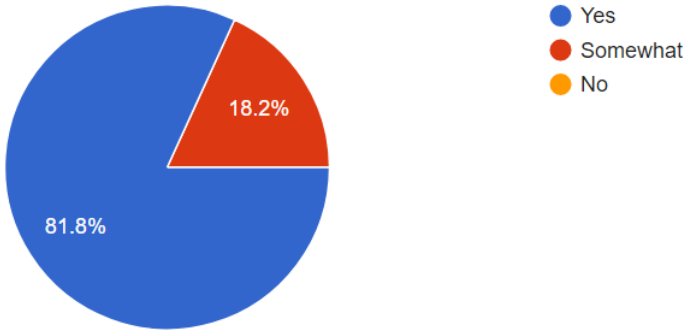
Appendix G Member checking

ii Responses

Professionalism

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

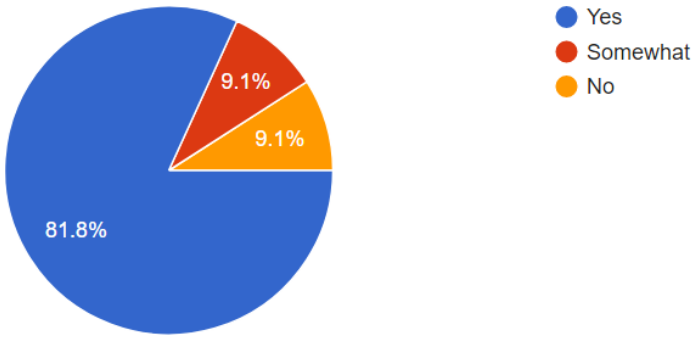
1 response

As a teacher I am regularly observed and my marking of work is scrutinised. Our school is right up to date with current policies and we have regular CPD meetings to reflect any changes both in education and child protection.

Barriers to Professional Development

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

2 responses

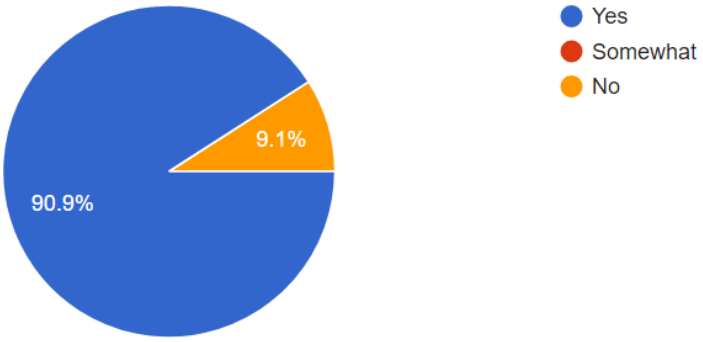
Our network and laptops are so slow that most things involving ICT are prevented currently.

Whilst we do not have the best ICT resources, our school does the utmost to keep up with current trends. We have Chrome books, lap tops and tablets to help with learning and some of our CPD includes the technology to use them.

Learning Needs

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

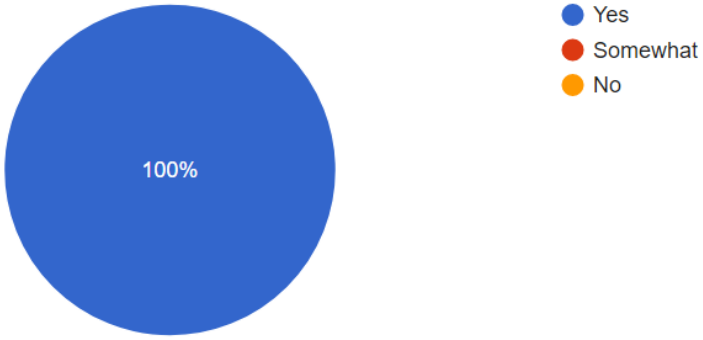
1 response

I have been on several courses to help maintain and enhance the students' learning in both my fields.

Positive Elements of Professional Development

Does this reflect your own experiences and opinions?

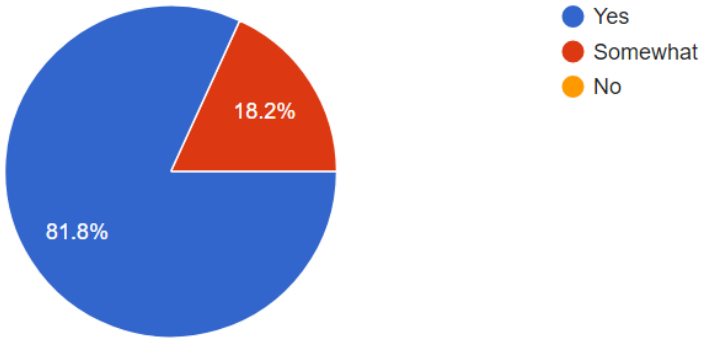
11 responses



Support Systems

Does this reflect your own experiences and opinions?

11 responses



W Would you like to add any comments regarding this category?

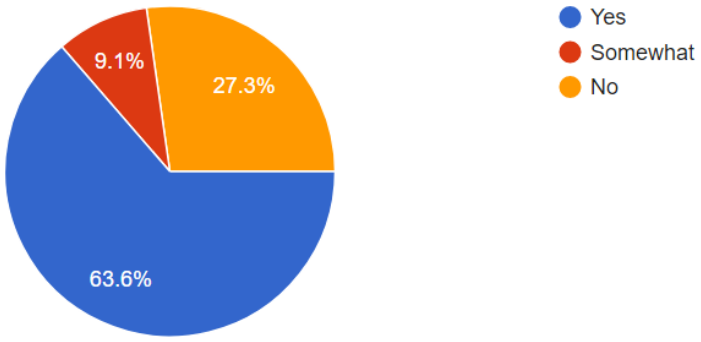
2 r 1 response

My experience in this area has only been underlined of late, having experienced the benefit of quality input from providers such as 'Google Expeditions', who visit schools, free of charge, to showcase new technologies such as VR in the classroom.

Use of Web 2.0

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

3 responses

We have no VLE as the bought one raised their prices dramatically and the expertise and time to create our own is lacking. We now are moving to using Sharepoint (MS). Twitter is banned for all in school, as is Facebook. I can't recall doing any online courses at all in this school. I don't think many teachers other than myself in this school have blogged. Web 2.0 being banned in school is severely detrimental to T&L.

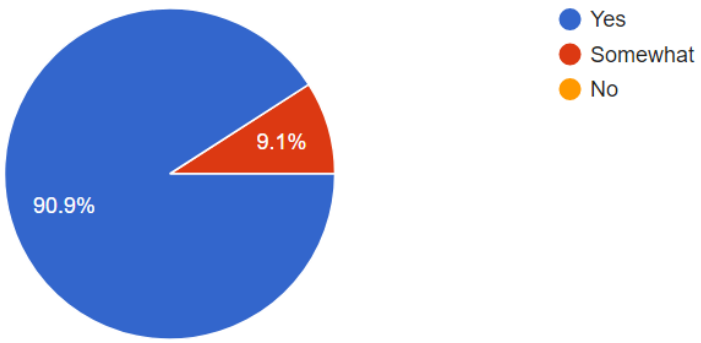
We also use pinterest, Youtube Google chrome and cloud ,Plickers and Kindle

A lot of free University courses now starting to link in as something that can be done online, with wine, in own time!

Professional Development Strategies

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

2 responses

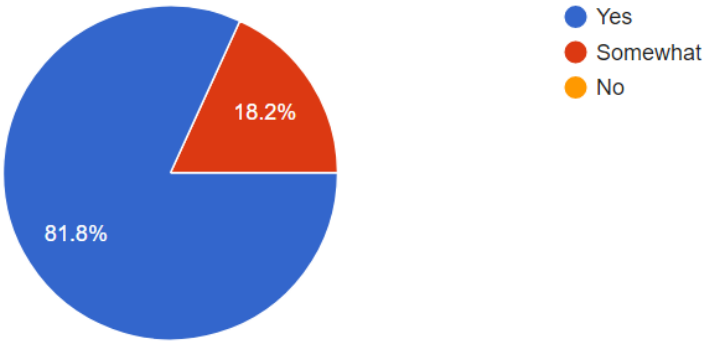
Whole school PD is usually used by us, though the other methods I use personally.

Our CPD sessions are often facilitated by our colleagues. I have personally delivered one and am currently developing another.

Attitude to Learning

Does this reflect your own experiences and opinions?

11 responses



Would you like to add any comments regarding this category?

1 response

The main barrier in our school is lack of time and funding to do anything.

Appendix H Audit materials

Halpern's (1983[1]) audit trail process identifies six categories of material needed: raw data, data reduction an analysis products, data reconstruction and synthesis products, process notes, materials relating to intentions and dispositions and instrument development information. Therefore, included in this pack are the following documents:

Focus group topic guide
Summary of transcript
written at point of transcription
Detailed process notes
written up from multiple memos during the coding process.
Transcript
with coding strips on adjacent pages from each phase of coding

In accordance with Halpern's (1983) audit trail process, please could you review the content included in light of its confirmability, transferability, dependability and credibility. We will discuss the audit in our next supervision, which I would like to audio record (with your permission) so aid me in writing it up for the methodology chapter.

[For the purposes of the Appendix, the topic guide and transcript have been removed. The topic guide, as it can be found in Appendix B, and the transcript, to conserve the anonymity of the participants involved. The transcript summary and detailed coding process notes remain.]

[1] Halpern, ES. (1983). *Auditing Naturalistic Inquiries: The Development and Application of a Model*. Unpublished Doctoral Dissertation, Indiana University.

SCH7 Session Summary - Key points

Professionalism:
Upholding the expectations of the school, whether or not you agree with them.
Continually developing oneself.
Upholding teachers standards
Obtaining qualified teacher status

Professional Development:
LA-led training.
Champion model - cascading CPD through departments.
Intensive day training - practical.
Cascade model is one of the school often uses for digital literacy learning.
Using Twitter and hashtags to disseminate CPD - links to EMCS – confident use of social media for professional learning.
Utilise internal knowledge - the school keeps note of who has had training and uses them to support others.
Feel the digital literacy programme has worked because it's lead by a member of staff, not an external 'expert'.
'Driving those changes from within'
'Facilitating the empowerment of peers'
The process of data collection seems to have been valuable to the participant and allowing them the space to reflect on their CPD
School has clear CPD structure.
Time to make a start, time to get hands on.
Specialist teachers in digital literacy and teaching and learning liaise with external providers beforehand so that they can facilitate and extend the CPD delivered to other staff.
Staff appear very comfortable in approaching one another.
The trio I interviewed are well placed to support CPD - holding special roles in digital literacy learning, teaching and learning, and professional learning.
Teaching assistants are not always able to get free time for CPD - this issue has also been noted in other schools.
When staff attend external training they are expected to share what has been learnt and write reports on these sessions.
Feedback is gathered short-term, mid-term and is planned for long-term.
They also utilise expertise from local school news - they prefer to learn from practicing educators who understand the Leicester contact - this can include higher education institutions as well.
'Learning Matters' - a bulletin specifically about CPD, which summarises staff experiences helping to identify internal experts.
'You always get the Doom mongers and the naysayers!' - Colleagues who view CPD as extra work.
Technical issues.
1. Must be delivered by an expert.
2. Important to have practical, hands on experience.
3. Network/System must be robust.
Staff should model positive use of technology for learning.
If teachers don't keep up with technology they will appear obsolete and irrelevant.
School duty to upskill students to create a level playing field.
Modelling and striving for development.

Supporting peers.
Necessary to keep up, with infrastructure to support, the model for students and share with colleagues - the critical cycle.
Expert guidance.

Coding process – compiled memo notes

First round of analysis – initial coding

I began by assigning codes to each transcript as I collected the data. I attempted to use the constant comparative method, though I found some of the functionality in NVivo 10 lacking and it was often hard to find past nodes. To speed up the process, if I couldn't find an existing node that I knew was in the system, I purposefully created a similar node, with the intention to merge these in the next stage of coding. In keeping with Charmaz's (2014) notion of initial coding, analysis is open-ended during this stage. In vivo coding, words directly from the participant's own language, and process coding, gerunds used to signify observable actions, were used widely at this stage (Saldaña 2009).

Second round of analysis – focused coding

Due to some usability issues with NVivo 10, I have a lot of codes. In order to being to review, compare and merge the codes, I have begun to categorise them fairly loosely so that I can then consider the codes in smaller, related groups. I realised at this stage that I needed to consider the data from the initial professionalism question separately from the rest of the data, since they are concerned with a different topic. Reviewing the codes in this way made it far easier to develop sub-categories within the data; seven in total. The labels for these developed as I worked through the data.

1. Change -> Lifelong Learning -> Adaptability
2. Duty of care
3. Teaching quality -> Quality practice
4. School context
5. External expectation -> Accountability
6. Qualification -> Competency
7. Working as a team -> Collegiality

Adaptability – the need for a teacher to respond well to changes in teaching practice and classroom technologies. Initially this sub-category looked like *responding to change* as noted in the pilot study, however, I realised that some statements related to topic wider than just a response to change. For example, lifelong learning. The amalgamation of the two themes led me to adaptability – the ability to respond to change and to learn new skills where necessary to advance.

Duty of care – linked to the traditional perspectives of serving the public good and the caring professions. This theme was clearly distinct from the data, as each statement captured by this sub-category related to the participants' aims to support and care for their students.

Quality practice – these are the characteristics that make a teacher highly regarded for the quality of teaching. Throughout the analysis process, I discussed my emerging ideas with my partner, as secondary school science teacher in the East Midlands, as he makes for an appropriate sounding board for my developing theory and is able to help me reflect on the

context of my work. After feeding back on this category, I changed the label from teaching quality to quality practice to improve clarity.

School context – these are the instances in which participants implied that their practice, and professionalism, was influenced by the wider context and culture of the school.

Accountability – these are the standards and expectations that teachers must live up to. The label was changed to accountability as this was felt to reflect the vocabulary in the field was efficiently.

Competency – the skills, training and formal qualifications necessary to be an effective teacher. This label began as qualification but was changed to competency to indicate the wider range of skills involved beyond formal qualifications.

Collegiality – the ability of a teacher to work effectively and productively with their colleagues for the greater good of the school. The label was changed from working as a team to represent the reciprocal nature, and mutual professional respect involved in this relationship.

Having conducted the focused coding for the professionalism data, I then felt much more confident about approaching the main professional development data. As well as categorising the codes, at this stage I also highlighted codes for: review, of the data captured by the code; rethinking, assessing the suitability of the label; and, merging, where obvious repeated codes were found. Twenty categories were introduced at this stage.

1. *Time* – all codes relating to the issue of time.
2. *Systems* – codes discussing school hardware, software or networks.
3. *Support* – all avenues of support accessed by participants during CPD.
4. *Self-directed* – self-initiated, independent CPD.
5. *School context* – instances where participants noted the unique nature of practice within their school.
6. *Active learning* – the need to be engaged and involved in CPD.
7. *Balancing* – teachers having to balance or weigh up engagement with technology and CPD over other responsibilities.
8. *Learning needs* – aspects of CPD that participants would like to experience, that they perceive as beneficial.
9. *Mentality* – approach to digital literacy CPD.
10. *Beneficial factors* – what works well.
11. *Internal CPD* – CPD organisation and delivery by the school staff.
12. *PD organisation* – CPD strategies and approaches.
13. *PD delivery* – often negative experiences of CPD delivery.
14. *Confidence* – all codes relating to the issue of confidence.
15. *Students* – references made to student activity and outcomes.
16. *Barriers* – what does not work, what hinders CPD.
17. *Teaching practice* – examples of current practices.
18. *Collegiality* – examples of collegiate practices.
19. *Web 2*.0 – use of web 2.0 to support CPD.
20. *BSF* – all codes relating to the Building Schools for the Future programme.

21. *Access* – themes affecting access to CPD, e.g. money.

Third round of analysis – focused coding

With codes now organised into categories, I have been able to review each category in turn and compare all of the codes within it. I have been reviewing the codes in relation to: their fit within the category, their fit against the other codes and if they replicated any other codes. I realised whilst conducting this round of analysis that I had very specific codes and that by merging closely related codes the data became more clearly organised. I was then able to merge to redistribute some categories as their focus became clearer.

1. *Support* – reviewing the codes within this category, I developed 6 codes from the original 110. *Learning from colleagues*, *supporting others*, *external support*, CPD *resources*, *other schools*, and *lacking support*. The latter code was then moved to *Barriers* as it was a better fit in that category.
2. *Professionalism* – was not reviewed again this stage as I working to get the other categories at this level of organisation.
3. *Web 2*.0 – reviewing the codes, I noticed that they could be merged by tool/application. This transformed 56 codes into 13 codes.
4. *Barriers* – reviewing the codes present within the category identified seven codes: *lacking technical knowledge*, *poor CPD delivery*, *negative attitude of others*, *Cinderella sector*, *inability to embed*, *lacking positive CPD,* and *forgotten CPD.* These were joined by codes from other categories (as noted in each respective category summary). Five further codes were added: *being let down by technology issues*, *being held back by network issues*, *financial constraints*, *lacking support* and *needing enough staff*.
5. *System* – this category was subsumed by *Barriers* and *Learning needs*. The codes represented in this category were either issues faced or CPD elements desired by participants.
6. *CPD Organisation -> CPD Strategies* – the content of this category was found to be a mix of *poor CPD delivery* codes and others discussing the strategies employed within the schools. The *poor CPD delivery* codes were merged with those in *Barriers* and the category renamed.
7. *School context -> Relevance* – upon reviewing the codes within this category, I noted that they all discussed the relevance of CPD in relation to their school context. The relevance label was chosen as best representative of the category.
8. *Time* – seven codes were identified from the original 22, each discussing different uses for time, such as, time to reflect, time to implement and time to work with others.
9. *Beneficial factors -> Positive elements* – upon presenting this category to my partner, it was suggested that I relabel the category to make it clear what the focus is. The codes were reduced from 23 to nine: *lots of ideas*, *opportunity to embed*, *evidence of success*, *duration*, *not over-relying on ICT*, *learning basics*, *access to tools*, *mid-term evaluation*.
10. *Active learning* – the codes within the category were reduced from 19 to five: *initial exploration*, *receiving passive CPD, practical guidance*, *playing a role*, and *project approach*.
11. *Students* – codes were merged to form a total of 6 codes, from the original 20. Some were also moved to *relevance* and *access* where they fit better.

12. *Teaching practice -> Digitally literate practice* – I noted that the practices shared within the category could be organised into digital literacy and digital practice. Four others were moved to support, under the code *sharing practice* reducing 24 codes down to two.
13. *Balancing -> Value judgements* – the 19 codes within this category were rearranged into 3 codes: *conflicting responsibilities*, *not a school priority*, and *cautious of 'flashy' tools*. Through feedback the label was changed for clarity.
14. *BSF* – the initial 16 codes were merged into 6 codes: *lacking support from Capita*, *'we've ended up going backwards'*, *expecting teachers to be experts*, *renewing old services*, *system not working*, *BSF CPD not used*.
15. *Access* – this category was subsumed into *Barriers* and *Learning needs*. The majority of the content here was linked to financial constraints, with other codes merging into existing codes for technology and network issues.
16. *Learning needs* – a smaller proportion of codes were merged within this category as I struggled to identify the relationships between the codes. Two amalgam codes were found, however, *preferring to learn face-to-face* and *needing facilitator to be knowledgeable*. The other codes were to be reconsidered in the next phase of analysis and review.
17. *Internal CPD* – fourteen codes were reduced to four: *utilising internal expertise*, *colleagues rather than 'experts'*, *receiving in-house CPD* and *delivering in-house CPD.*
18. *Mentality -> Attitude to learning* – the contents were reviewed and one code was removed as poor fit. The label was changed to reflect the content of the category better.
19. *Confidence* – a few codes were removed as poor fit.
20. *Self-directed* – eleven codes were reduced to five: *directing own learning*, *learning through the process*, *having a go*, *seeking funding independently*, *relying on own judgement*.
21. *Collaboration* – three codes were identified from the initial eleven: *learning collaboratively*, *networking locally* and *supportive school culture.*
22. *Lifelong learning* – deemed a code not a category, merged and added to *Professionalism/adaptability*.
23. *CPD delivery* – all codes were negative examples of CPD so were merged with *Barriers/poor CPD delivery*.

Finally, having reviewed each category, I revisited the codes that I have been unable to categorise previously. In light of the improved organisation of the data, I was able to merge and/or categorise 67 of the 97 remaining codes.

Fourth round of analysis

For this round on analysis, my focus was on the categories, given that the codes went through an extensive review in the previous round. Here I considered the relationships between the categories.

1. *Professionalism* – having rearranged the others codes in the data into closely related codes, I merged each of the 7 sub-categories from the first round of coding into codes.

2. *Barriers – value judgements* (relabelled as *conflicts of interest*) was subsumed along with *BSF* as sub-categories within this category. Both categories represented only *Barriers* and so were moved.
3. *Support – sharing practice* was moved from *Support* into *Positive elements*.
4. *Web 2*.0 – no change.
5. *Relevance* – subsumed as a sub-category into *Learning needs*.
6. *Active learning* – contents merged and subsumed into *Positive elements* as a code.
7. *Learning needs – relevance* and *time* were subsumed as sub- categories. The language captured by these categories was speaking of needs.
8. *Time* – subsumed as a sub- category into *Learning needs*.
9. *Positive elements – internal expertise* was subsumed as a code. *Sharing practice* was moved from *Support*. *Collaboration* was subsumed as a sub- category.
10. *CPD Strategies – self-directed* subsumed as a code.
11. *Value judgements -> Conflicts of interest* – subsumed as a sub- category into *Barriers*.
12. *BSF* – subsumed into *Barriers* as a sub- category.
13. *Internal CPD* – contents merged and subsumed into *Positive elements* as a code.
14. *Students* – no change.
15. *Digitally literate practice* – no change.
16. *Attitude to learning – confidence* subsumed as a code.
17. *Confidence* – contents merged and subsumed as a code into *Attitude to learning.*
18. *Collaboration* – subsumed into *Positive elements* as a sub- category.
19. *Self-directed* – contents merged and subsumed as a code into CPD *strategies.*

At this stage I noted that seven of the resulting ten categories represented data from all seven schools in the study and so had reached theoretical saturation. These seven categories were therefore chosen as the main themes to be presented from the data:

1. Barriers to PD
2. Professionalism
3. Positive elements
4. Learning needs
5. Support systems
6. Web 2.0
7. PD Strategies